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AUTHOR	Ryan-Jones, Rebecca E.; And Others
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ABSTRACT

This document contains four bibliographies and two sets of abstracts of materials on computer-assisted guidance systems. The first bibliography contains references pertaining to the use of the computer-assisted guidance system, DISCOVER. The cited documents are classified as theoretical foundations, evaluation and research reports, program descriptions, and supporting materials. The second bibliography contains references to the System of Interactive Guidance and Information (SIGI). Documents are classified in the same four categories as in the DISCOVER bibliography. The third bibliography, covering general issues, contains citations that address a variety of topics including the role of computer applications in providing counseling and career planning services, ethical issues, the implementation process, research and evaluation issues, and comparative descriptions of two or more systems. The fourth bibliography contains citations that address a variety of similar topics including the role of computer applications with a disabled population in providing counseling and career planning services. The final two sections, which make up the bulk of the document, contain 52 abstracts of materials concerning the DISCOVER system and 70 abstracts of materials about SIGI. Document abstracts are classified according to evaluation and research studies, program descriptions, supporting documents, and theoretical bases of the systems. The abstracts include a bibliographic citation and where appropriate, an address from which copies of the document may be obtained. (KC)

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BIBLIOGRAPHIES AND ABSTRACTS

CLEARINGHOUSE FOR COMPUTER-ASSISTED GUIDANCE SYSTEMS

Project LEARN - Phase II

Lifelong Education, Assessment, and Referral Network

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The Florida State University
Department of Human Services and Studies
215 Stone Building
Tallahassee, Florida 32306-3001
(904) 644-3854

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Rebecca E. Ryan-Jones
Michael Shahnasarian
James P. Sampson, Jr.
Robert C. Reardon
Jill M. Clark
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The Clearinghouse for Computer-Assisted Guidance Systems was established to provide current and readily accessible information relevant to selecting, implementing, and evaluating computer-assisted guidance systems. The DISCOVER system and the System of Interactive Guidance and Information (SIGI) represent the two most widely used guidance-type (as opposed to information type) systems currently in use. As a result, Clearinghouse materials feature these two systems. If you have any questions concerning the enclosed abstracts, or wish to submit a document relating to DISCOVER or SIGI for abstracting, please contact the Clearinghouse.

Appreciation is extended to the American College Testing Program and the Educational Testing Service for their assistance in the development of Clearinghouse materials.

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Project LEARN-Florida State University

DISCOVER BIBLIOGRAPHY

This bibliography contains references pertaining to the use of the computer-assisted guidance system, DISCOVER. Documents cited include theoretical foundations (TD), evaluation and research reports (ED), program descriptions (PD), and supporting materials (SD). The final entry in each citation represents a letter code (TD, ED, PD, SD) corresponding to an abstract which can be obtained from the Clearinghouse for Computer-Assisted Guidance Systems, c/o James P. Sampson, Ph.D., Dept. of Human Services and Studies, 215 Stone Building, The Florida State University, Tallahassee, Florida 32306-3001. The Clearinghouse does not provide copies of the original documents. To locate the original documents, please refer to the appropriate journal, book, or sponsoring organization. Additional information on DISCOVER may be obtained from: DISCOVER/ACT Center, Schilling Plaza South, 230 Schilling Circle, Hunt Valley, Maryland 21031, (301) 628-8000. Additional information on the use of computer-assisted guidance systems may be obtained from the Association of Computer-Based Systems for Career Information Clearinghouse, 1787 Agate Street, Eugene, Oregon 97403.

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Project LEARN-Florida State University

SYSTEM OF INTERACTIVE GUIDANCE AND INFORMATION (SIGI) BIBLIOGRAPHY

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APPLICATIONS FOR DISABLED PERSONS

This bibliography contains citations that address a variety of topics including the role of computer applications with a disabled population in providing counseling and career planning services, ethical issues, the implementation process, research and evaluation issues, and comparative descriptions of two or more systems. In general, documents describing a single system have not been included in this bibliography. Additional information on the above topics may be obtained from the National Rehabilitation Information Center, c/o D:ATA Institute, The Catholic University of America, 4407 8th Street, NE, Washington, DC 20017.

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ABLEDATA: A data bank containing information on adaptive devices and equipment for disabled individuals. [Computer program] (Available from National Rehabilitation Center, 4407 Eighth Street, N.E., Washington, DC 20017. (202)635-5826.)

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Preface to Abstracts

PREFACE TO ABSTRACTS - THEORETICAL BASES OF THE SYSTEMS

The Clearinghouse for Computer-Assisted Guidance Systems was established as one component of Project LEARN to provide current and readily accessable information relevant to selecting, implementing, and evaluating computer-assisted guidance systems. Abstracts from documents relating to the DISCOVER System and the System for Interactive Guidance and Information (SIGI) may be obtained from the Clearinghouse. Document abstracts are classified as follows:

1. E - Evaluation and Research Studies
2. P - Program Descriptions
3. S - Supporting Documents (e.g., manuals, handbooks, etc.)
4. T - Theoretical Bases of the Systems

The abstracts include a bibliographic citation and where appropriate, an address from which copies of the document may be obtained. The body of the abstracts in each classification follows a consistent format for ease in obtaining and comparing information about each system.

Theoretical Bases Abstracts contain six sections as follows:
Statement of the purpose of the article and its relevance to either SIGI or DISCOVER.
Presentation of the theory or theories referred to in the document.
Discussion of the studies cited to validate the theory.
Derivation of the sources of information (e.g., personal observations, published literature, previous research).
Conclusions presented in the document.
Final sentence which indicates the availablity of data, literature review, and references.

It should be noted that the abstracts are only as complete as the original documents. Authors' styles do not always lend to this format's structure. At times the abstracts will appear inconsistent with the format outlined above. The opinions reported in each abstract reflect the beliefs of the document author(s), and do not necessarily reflect the opinions of Project LEARN staff.

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PREFACE TO ABSTRACTS - SUPPORTING DOCUMENTS

The **Clearinghouse** for Computer-Assisted Guidance Systems was established as one component of Project LEARN to provide current and readily accessable information relevant to selecting, implementing, and evaluating computer-assisted guidance systems. Abstracts from documents relating to the DISCOVER System and the System for Interactive Guidance and Information (SIGI) may be obtained from the Clearinghouse. Document abstracts are classified as follows:

1. E - Evaluation and Research Studies
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3. S - Supporting Documents (e.g., manuals, handbooks, etc.)
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Statement of the purpose of the supporting document.
Presentation of the subject matter included in the document.
Derivation of the specific information (e.g., Occupational Outlook Handbook, DOT, specific government sources, etc.).
Discussion of the specific information contained in the document.
Sentence which includes the number of pages, cost (if known), and availability of references.
Suggestions of how this resource can be used by counselors.

It should be noted that the abstracts are only as complete as the original documents. Authors' styles do not always lend to this format's structure. At times the abstracts will appear inconsistent with the format outlined above. Frequently the original document will fail to mention the derivation or the sources of information provided. Cost of the document is not always available. When reported, it should be noted that the cost identified in the abstract may not reflect the current cost of the document, as prices are subject to change. The opinions reported in each abstract reflect the beliefs of the document author(s), and do not necessarily reflect the opinions of Project LEARN staff.

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PREFACE TO ABSTRACTS - PROGRAM DESCRIPTIONS

The Clearinghouse for Computer-Assisted Guidance Systems was established as one component of Project LEARN to provide current and readily accessable information relevant to selecting, implementing, and evaluating computer-assisted guidance systems. Abstracts from documents relating to the DISCOVER System and the System for Interactive Guidance and Information (SIGI) may be obtained from the Clearinghouse. Document abstracts are classified as follows:

1. E - Evaluation and Research Studies
2. P - Program Descriptions
3. S - Supporting Documents (e.g., manuals, handbooks, etc.)
4. T - Theoretical Bases of the Systems

The abstracts include a bibliographic citation and where appropriate, an address from which copies of the document may be obtained. The body of the abstracts in each classification follows a consistent format for ease in obtaining and comparing information about each system.

Program Description Abstracts contain six distinct sections as follows:

Discussion of the purpose of the document.
Presentation of the topics covered.
Restatement of the central thesis of the document.
Comment on the sources used (e.g., personal observations, published literature, previous research).
Conclusions from the document regarding the effectiveness of the system.
A final sentence which indicates the availability of a literature review, references and data.

It should be noted that the abstracts are only as complete as the original documents. Authors' styles do not always lend to this format's structure. At times the abstracts will appear inconsistent with the format outlined above. Frequently the sources used to describe the program will not be discussed in the original document. The opinions reported in each abstract reflect the beliefs of the document author(s), and do not necessarily reflect the opinions of the Project LEARN staff.

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PREFACE TO ABSTRACTS - EVALUATION AND RESEARCH STUDIES

The **Clearinghouse for Computer-Assisted Guidance Systems** was established as one component of Project LEARN to provide current and readily accessable information relevant to selecting, implementing, and evaluating computer-assisted guidance systems. Abstracts from documents relating to the DISCOVER System and the System for Interactive Guidance and Information (SIGI) may be obtained from the Clearinghouse. Document abstracts are classified as follows:

1. E - Evaluation and Research Studies
2. P - Program Descriptions
3. S - Supporting Documents (e.g., manuals, handbooks, etc.)
4. T - Theoretical Bases of the Systems

The abstracts include a bibliographic citation and where appropriate, an address from which copies of the document may be obtained. The body of the abstracts in each classification follows a consistent format for ease in obtaining and comparing information about each system.

Evaluation and Research Abstracts contain five distinct sections:

Purpose of the evaluation or the research questions.

Discussion of the methodology, including the specific subject population, research design, instrumentation, research apparatus, and the data gathering procedures.

Presentation of the results.

Discussion of the conclusions, implications, recommendations, applications, and limitations of the study as specified in the document.

A final sentence provides imformation regarding the availability of references, data, literature review, and theoretical perspective.

It should be noted that the abstracts are only as complete as the original documents. Authors' styles do not always lend to this format's structure. Documents reviewed do not always include information about the nature or the number of subjects used in the study. Results, while generally presented, do not always specify the level of significance. Frequently, theoretical bases are not discussed in the document, and data is not always displayed for the user to draw his/her own conclusions. For those documents where information is missing, the abstracts may appear inconsistent with the format outlined above. The opinions reported in each abstract reflect the beliefs of the document author(s), and do not necessarily reflect the opinions of the Project LEARN staff.

The Clearinghouse does not provide copies of the original documents. To locate documents please refer to the appropriate journal, book, or sponsoring organization.

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DISCOVER Abstracts

TD
Lamb, R.R. & Prediger, D.J. (1981). Technical report for the Unisex Editon of the ACT Interest Inventory (UNIACT). Iowa City, IA: American College Testing Program.

Research Division, American College Testing Program, P.O. Box 168, Iowa City, Iowa. 52243.

This report documents the psychometric characteristics of the Unisex Edition of the ACT Interest Inventory (UNIACT). An overview of the UNIACT is provided which includes: 1) it's historical basis; 2) interpretive aids for the basic Interest scale profile; 3) the World-of-Work Map; and 4) the Map of College Majors. In addition, UNIACT's rationale, construction, and norming are described with special emphasis on sex-balanced (in contrast to sex-restrictive) approaches to vocational interest measurement. New data on score sex balance, reliability and stability are provided along with summary interest profiles for 352 educational and occupational groups. Studies of the intercorrelations of the UNIACT scales indicate high convergent and divergent validity based on Holland's hexagonal model. Numerous studies establishing criterion-related validity are presented. The criterion-related validity evidence from the studies cited suggests that the UNIACT is about as valid for minority group members as for other individuals. Studies cited are compared graphically through the use of data tables. The authors provide a list of ACT and Non-ACT sponsored reports on the UNIACT. A copy of the UNIACT is contained in the report, as are UNIACT scoring procedures and norm tables. A literature review and references are included in this 87 page report.

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TD
Prediger, D.J. (1976). A world of work map for career explanation. Vocational Guidance Quarterly,24, 198-208.

This article briefly describes the development, characteristics, and use of the World-of-Work Map and the associated American College Testing Program Occupational Classification System (ACT-OCS). The main purpose of the map and the ACT-OCS is to provide persons at an early stage of career planning with an overiew of the world of work and to help them to identify personally relevant occupational options. The author concludes that two basic, bipolar dimensions of work-related preferances (a data/ideas dimensions and a people/things dimension) constitute the primary dimensions differentiating the interests of members of various occupational groups. The same two dimensions characterize the interests of persons in general. Work tasks (as evidenced by ratings of occupational characteristics) can be described by these two dimensions. Finally, the data/ideas and people/things dimensions can be used to categorize occupations into job families (ACT-OCS) and to arrange these job famalies on a World-of-Work Map useful in career explorations.

Graphic figures clearly present the relationship of job clusters and the Data/ideas, People/Things work tasks dimensions, and the World-of-Work Map. The general correspondence between work task preferences, ACT-OCS Job clusters and interest scales are contained in a table. Literature review, references are included in the article.

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TD
Prediger, D.J. (1981). Getting "ideas" out of the DOT and into vocational guidance. Vocational Guidance Quarterly, 29, 293-305.

This article provides major new evidence supporting (a) the separate identities of data and ideas work task, and (b) the existence of data/ideas and things/people work task dimensions. The evidence is based on analysis of the US Department of Labor work field, work activity, and worker function ratings for every occupation in the 4th Edition DOT.

These occupations were assigned separate data, ideas, people and things scores within each rating area (ie., work field, work activites, and worker functions). An occupations' summary code for a given work task, (e.g., things) was simply the sum of the scaled scores for things within the three rating areas. Three types of analysis were conducted: (1) the separate data and ideas summary scores were examined for each of the seven DOT worker function codes for data; (2) interrelationship amongst the summary scores were studied, and (3) the 559 DOT occupational groups were ranked on the bipolar dimensions on the basis of their mean data ideas and things/people scores.

The results of these analysis yielded evidence that two pairs of work tasks (data and ideas, people and things) tend to be opposites and that the pairs are essentially independent. On the basis of this evidence, the four work task summary scores were combined to form two bipolar dimensions: data/ideas and things/people. These same dimensions are compatible with the basic types of occupations and interests proposed by Roe and Holland in their vocational theories. Some everyday vocational guidance applications of the research results are described.

Tables are used to clarify the data. Literature review and references are included in this article.

TD
Prediger, D.J. (1981). Mapping occupations and interests: A graphic aid for vocational guidance and research. Vocational Guidance Quarterly, 30, 21-36.

This paper describes a simple procedure for translating scores for Holland's interest types into (a) locations on Holland's model of the world of work and (b) regions on the ACT World-of-Work Map. The World-of-Work Map graphically depicts similarities and differences among occupations, thus providing an overview of the world of work. The applications section explains how persons can chart their "locations" in the world of work and identify occupations with similiar locations (ie., occupations congruent with their interests). Mapping occupations and interests appears to be especially appropriate for persons in the early stages of career planning. Research uses of occupational/interest maps are also discussed.

Figures provide the reader with graphic examples of the relationship among Holland's types according to the Hexagonal Model, the location of the 3-Letter Code groups on the data/ideas and things/people dimensions, and the World-of-Work Map. The World-of Work Map regions which correspond to Holland's 3 letter codes are provided in a table. Literature review and references are provided in the article.

TD
Prediger, D.J. (1982). Dimensions underlying Holland's hexagon: Missing link between interests and occupations? Journal of Vocational Behavior, 21, 259-287.

This research study examined the nature of the interest dimensions underlying Holland's hexagon. Two studies are reported. Study 1 examined the extent to which two theory based dimensions - data/ideas and things/people - fit 27 sets of intercorrelations. Each set of intercorrelations was based on measures of Holland's six types. Three of the data sets involve the mean scores of career groups (total of 228 groups and 35,060 individuals); 24 involve the scores for individuals (total of 11,275).

Study 2 explored the heuristic value of the data/ideas and things/people dimensions by determining whether they contribute to the understanding of why interest inventories work. Two data sets covering a total of 563 occupations were used to calculate correlations between the vocational interests of persons and the tasks which characterize the persons' occupations. Each occupation's principal work tasks were determined from job analysis data obtained from the U.S. Department of Labor.

Study 1 results provide substantial support for the theory based dimensions. Study 2 results suggest that interest inventories "work" primarily because they tap activity preferences which parallel work tasks. Counseling and research applications of the data/ideas and things/people dimensions are suggested and implications for interest assessment are noted. References and statistical data are provided in this 18 page article.

TD
Prediger, D.J. & Johnson, R.W. (1979). Alternatives to sex-restrictive vocational interest assessment (ACT Research Report No. 79). Iowa City, IA: American College Testing Program.

Research Division, American College Testing Program, P.O. Box 168, Iowa City, Iowa 52243.

The primary purpose of this report is to summarize recent research on interest assessment procedures as it bears on the issue of sex restrictiveness. Studies documenting sex restrictiveness in widely used interest inventories are cited, and various alternatives to sex restrictive interest assessment are suggested. Separate consideration is given to basic (homogeneous) interest scales and occupational scales. For basic interest scales, results are summarized for 15 recent validation studies which support the use of interest scores that are not sex restrictive. Such scores can easily be obtained for traditional scales that assess basic interests. Various alternatives to traditional, sex-restrictive occupational scales are reviewed, including the use of cross-sex scales, combined-sex scales, cluster scales, and sex-balanced scales. Normative and correlatonal data are presented as aids in mitigating sex-restrictiveness in exisiting occupational scales, primary attention is given to the possibility that, contrary to current practice, interest inventories can consist entirely of items that elicit similiar responses from males and females. The scores for such "unisex" inventories would provide males and females with similiar vocational suggestions. Reliability and validity data for one such scale, the Unisex Edition of the ACT Interest Inventory (UNIACT), are summarized.

Tables provide clear representation of the data discussed in the report. The correlation matrix for the total sample of 1,134 males and 1,044 females first-year students at the University of Wisconsin-Madison is contained in the Appendix. Literature review and references are provided in this 41 page report.

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Harris, J., & Tiedeman, D.V. (1974). The computer and guidance in the United States: Past, present, and a possible future. Dekalb, IL: Northern Illinois University. (ERIC Document Reproduction Service No. ED 095 372)

In presenting the state of the art of computers in guidance programs, the authors maintained that there are many potential uses for computers in career decision making. Three types of computer-involved guidance systems were in use in 1970: indirect inquiry systems, direct inquiry with system monitoring, and direct inquiry with system and personal monitoring. By 1974, only 5 direct inquiry systems remained, and all but one was directed to secondary school students.

The authors describe the conceptual basis of DISCOVER, a computer-based guidance system under development in 1974. The new system was innovatively designed differently from other systems in that: a) DISCOVER would support sequential career development; b) DISCOVER would address new themes such as values clarification and decision making, and use some new techniques, such as gaming and simulation; c) DISCOVER would be designed for transportability; d) DISCOVER would make fuller use of personal data about the user to assist in career exploration and decision making; e) DISCOVER would make use of the technical improvements of 1975.

References are included in this 23 page document. The literature review acquaints the reader with the historical background of computer-assisted guidance and information systems (CACGS), and specifically DISCOVER. Included in the appendix are brief descriptions of existing dominant computer-involved guidance systems in the United States in 1975. Addresses for further information are available for each system. Additionally, a brief description of the modules being designed for the secondary school component of DISCOVER is included in the appendix.

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Prediger, D.J., & Hanson, G.R. (1978). Must inventories provide males and females with divergent vocational guidance? Measurement and Evaluation in Guidance, 11, 88-98.

The authors examine the results from three different samples of both males and females to determine if Holland's assumption, that males and females in the same occupation have the same personality pattern, is substantiated by the data. The results indicate that males and females have highly divergent personality patterns as reported by the raw scores Holland uses to operationally define his typology. There are substantial, systematic, and stereotypic differences in the Holland raw score codes of males and females pursuing the same occupations, especially nontraditional occupations. However men and women pursuing the same occupations receive essentially the same Holland codes when standard scores based on same-sex norms are used to report assessments of Holland types.

The authors conclude that either the assessment procedures or theoretical constructs used in Holland's theory of careers need revision to eliminate current contradictions. These finding are relevant to the use of the Unisex Edition of the ACT Interest Inventory (UNIACT) in the DISCOVER computer-assisted career guidance systems.

SD
American College Testing Program. (1985). DISCOVER for Microcomputers: Professional Manual. Hunt Valley, MD: Author.

ACT: DISCOVER Center, 230 Schilling Circle, Hunt Valley, MD 21031.

The DISCOVER for Microcomputers: Professional Manual presents a rationale for the use of computers in career guidance and suggests ways in which computers can be used with or without counselor support.

DISCOVER's four parts (Self-Information, Strategies for Identifying Occupations, Occupational Information, and Searches for Educational Institutions) are described. The Manual provides technical information necessary for operating the DISCOVER system, including installation, daily operational procedures, and sign-off procedure information for DISCOVER hardware. A telephone service number and chart designed to provide "trouble shooting" assistance with problems in the system is included. References are available in the 30 page Manual.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The authors make suggestions of ways in which computers can be used to provide assistance with career development and career choice. Counselors may find the Professional Manual useful for gaining an understanding of DISCOVER's content. The Manual can also be used as a reference for emerging technical problems.

53

SD
American College Testing Program. (1985). DISCOVER for Microcomputers: User Guide. Hunt Valley, MD: Author.

ACT: DISCOVER Center, 230 Schilling Circle, Hunt Valley, MD 23031.

An introduction to the DISCOVER computer-assisted guidance system is provided in the DISCOVER for Microcomputers User Guide. The Guide outlines the system's basic operational procedures, including signing on and off, using important commands, changing disks. The World of Work Map used in DISCOVER is also described. Appendices in the Guide include lists of: 1) DISCOVER occupations with corresponding number; 2) two-year colleges; 3) four-year colleges; and 4) graduate schools. A list of high school subject areas and directory of DISCOVER codes for two-year college majors, four-year college majors, and graduate schools is also provided. The Guide consists of 100 pages.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

Counselors can refer users to the Guide in order to obtain general information regarding DISCOVER°s content and operation. The appendices can be used for reference purposes.

SD
Harris-Bowlsbey, J. & Rabush, C.M. (1984). DISCOVER for Adult Learners: Professional Manual. Hunt Valley, MD: American College Testing Program.

ACT: DISCOVER Center, 230 Schilling Center, Hunt Valley, Maryland 21031.

The manual is published by the American College Testing Program as a professional guide to the use of the DISCOVER for Adult Learners, computer-based career guidance system. The manual includes an introduction to the use of computers in career guidance, an explanation of the World-of-Work concept used in DISCOVER, and a description of the contents of DISCOVER for Adult Learners. Detailed descriptions are provided for DISCOVER for Adult Learners' six modules: 1) Weathering change, 2) Assessing self and identifying alternatives, 3) Gathering career information, 4) Making decisions, 5) Drafting educational plans, and 6) Getting a job. The rationale and description for the unisex edition of the ACT Interest Inventory (UNIACT) are contained in the appendix. The 28 page manual is available from the American College Testing Program, and includes references.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The manual can help counselors become familiar with the content in DISCOVER for Adult Learners and provide information on the use of DISCOVER in planning services for adults, including adults planning to enter or reenter the job market, adults interested in making a career change, and unemployed adults. The manual provides counselors with guidelines for the use of the DISCOVER system alone, or in conjunction with career advisors, and/or curricular or workshop approaches.

SD
Rayman, J.R. (1981). College/Adult Level Professional Manual for DISCOVER. Westminister, MD: American College Testing Program.

ACT: Discover Center, 230 Schilling Circle, Hunt Valley, MD 21031.

The revised College/Adult Level Professional Manual describes the twenty-two modules of material contained in the DISCOVER guidance system. Lists of supportive materials that address objectives similar to the DISCOVER module are included.

The Manual presents a plan designed to integrate DISCOVER into an existing career development program. DISCOVER°s use in counseling centers with diverse orientations are discussed, and suggestions are made for ways in which counselors can assimilate selected modules into existing programs.

Finally, the Manual provides instruction to counselors for performing such tasks as text modification, the modification of linkages, and the development of new materials. Included in the appendices is: 1) a description of DISCOVER occupational value weightings with a list of occupational titles and corresponding DISCOVER number; 2) breakdown of DISCOVER occupation by career decision tree branches; 3) a reproduction of the Self-Directed Search; 4) 1981-1982 master list of DISCOVER occupations with corresponding Holland code and Dictionary of Occupational Titles (DOT) number; 5) list of state apprenticeship information centers; 6) list of military occupations used in DISCOVER; 7) "Frame Builder" text development and modification exercises; 8) sample scripts; and 9) sample printout of a frame of text. The Manual is 239 pages long.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The College/Adult Professional Manual for DISCOVER can be used to gain an understanding of the functions of the DISCOVER modules. Instructions for modifying and developing existing displays of text can be used to customize the system to meet extant needs.

SD
American College Testing Program. (1983). DISCOVER for Organizations: Human resource development manual. Hunt Valley, MD: Author.

ACT: DISCOVER Center, 230 Schilling Circle, Hunt Valley, MD. 21031.

The central purposes of the DISCOVER for Organizations system are: (1) to provide the employee with a tool for planning his or her own career development and (2) to provide managers with a systematic approach to supporting the career development of employees. The Human Resource Development Manual contains detailed descriptions of each of the five modules - Understanding Career Development and Change, Assessing Yourself, Gathering Information, Making Decisions, and Taking Actions. The manual also provides a description of the various system reports, including the on-line user usage summary, the Satisfaction Survey analysis, and the quarterly statistical reports on user data.

Instructions are included in the Human Resource Development Manual to allow organizations to modify the contents to provide the user with localized information specific to their particular organization. Suggestions for both employee and manager orientation to the DISCOVER system are included as are five potential implementation models. Technical information pertaining to: (1) the installation of the DISCOVER software; and (2) the protection of user records are available in the manual.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The authors make suggestions of ways in which the DISCOVER for Organizations system can be used to provide assistance with career development and career choice within the organization. Counselors may find the Human Resource Development Manual useful for gaining an understanding of the DISCOVER for Organizations' content. The manual may also be useful as a reference for implementation strategies and emerging technical problems.

SD
American College Testing Program. (1983). Getting to know DISCOVER. (Videotape). Hunt Valley, MD: Author.

ACT: DISCOVER Center, 230 Schilling Circle, Hunt Valley, MD. 21031.

This videotape, narrated in large part by JoAnn Harris-Bowlsbey, requires about two hours to view in its entirety. The tape can be logically divided into four parts, with each part emphasizing different aspects of the DISCOVER system. Part one describes the theoretical basis of the system, as well as providing an explanation of the self-knowledge section of the program. Part two describes the assessment instruments used in the system, and provides an explanation of the derivation of the individualized, accumulated list of occupations obtained by each user. In the third section, the viewer learns of the two means available, BROWSE and DETAIL, for the use of the occupational information files. Finally in part four, the educational files, containing information on specific educational institutions selected through user specified variables such as career choice, geographic location, student body size, etc., are described, and the viewer is exposed to the part of the DISCOVER program wherein each user has the opportunity to develop an action plan for further career/educational exploration.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

This videotape provides an overview of the DISCOVER computer-assisted guidance system which might be used for staff orientation to the system in either a group or individual format. Additionally the videotape provides an alternative media for cognitive orientation of potential DISCOVER users to enhance their awareness of the system, and their effective use of the system.

SD
American College Testing Program. (1984). DISCOVER for Adult Learners: User guide. Hunt Valley, MD: Author.

ACT: DISCOVER Center, 230 Schilling Circle, Hunt Valley, MD. 21031.

DISCOVER for Adult Learners is a computer-assisted guidance system designed to help adults in understanding their career/life transitions and developing resources and skills to make decisions and draft plans for career changes. This Manual provides a brief description of the six modules contained in DISCOVER for Adult Learners--Weathering Change, Assessing Self & Alternatives, Making Decisions, Educational Information, and Getting a Job. Instructions for using DISCOVER are included in this text. The World-of-Work Map, and the relationship between data, ideas, people and things is explained. The fifteen abilities and the sixteen values used in the second module, Assessing Self & Alternatives, are defined.

The appendix contain the DISCOVER occupations list, and the lists of two-year, four-year, and graduate schools. The list of schools offering external degree programs and their DISCOVER system codes are also included.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The counselor can use this manual to familiarize the user with the DISCOVER for Adult Learners program. Additionally the manual provides a handy color coded index to the various occupational and educational institutions contained in the DISCOVER data files.

SD
American College Testing Program. (1986). DISCOVER inservice training. (Videotape & training package). Hunt Valley, MD: Author.

ACT: DISCOVER Center, 230 Schilling Circle, Hunt Valley, MD. 21031.

The DISCOVER inservice training package is composed of a videotape (approximately 1 1/2 hours long); the DISCOVER inservice training manual; the Counselor manual; supplementary training materials; and transparency master. It is designed to be a complete and comprehensive training program which requires approximately 7-8 hours for optimal use. The author recommends that the videotape material, the leader's presentations, and the learning activities from the Counselor Manual be done in a group of 5 to 15 people. The reading of the Counselor Manual should be done by each individual alone, and the "hands-on" use of the DISCOVER system should be done by not more than two people at a time at each available terminal.

The first 11 minutes of the videotape explains the World-of-Work Map and the Job Families and how these concepts are used in the DISCOVER systems. The next 10 minutes of the videotape contains an interview with Donald Super explaining his Life-Career Rainbow. Following this section, Dr. Nancy Schlossberg describes her transition theory (11 minutes). The assessment inventories are described (15 minutes), followed by "Delivery Services" (26 minutes), and "Integrating DISCOVER" (16 minutes) sections of the videotape, which present the seven steps in the implementation of a systematic career guidance system, and four different modes of delivery -- one-to-one counseling, computer, curricular, and group approaches. The final 6 minutes of the videotape discuss potential ways of publicizing DISCOVER to students and obtaining administrative, faculty, and community support.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The materials in this training package are designed to assist career development professional staff become familiar with all the major DISCOVER systems and to do so with a minimum of time for preparation of staff training. To accomplish this, all the needed materials are included, as well as suggested formats for delivery of the training. The authors request that at the end of each training session, the participants be asked to evaluate the training system, and that this data be shared with ACT so that the system and materials developers can be responsive to feedback.

SD
American College Testing Program. (quarterly publication).
DISCOVER Newsletter. (Available from ACT's Educational Services Division, P.O. Box 168, Iowa City, Iowa 52243, (319) 337-1052 or (319) 337-1031) (SD)

The DISCOVER Newsletter is a quarterly publication which is intended as a vehicle for communication among all DISCOVER users and potential users. Each issue is designed to be a forum through which ideas, research, and successes can be shared between users. The Newsletter contains information about DISCOVER Users' Conferences, new DISCOVER programs such as DISCOVER for Adult Learners, as well as, new delivery systems, such as the interactive videodisc.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The DISCOVER Newsletter allows counselors to keep abreast with the newest additions to the DISCOVER family of career development programs. Additionally counselors may use the newsletter as a means of sharing their experiences with the various DISCOVER systems and their implementation successes and techniques.

SD
Harris-Bowlsbey, J. (1986). DISCOVER inservice training Manual: A complete training program for professionals using DISCOVER. Hunt Valley, MD: American College Testing Program.

ACT: DISCOVER Center, 230 Schilling Circle, Hunt Valley, MD. 21031.

The purpose of the DISCOVER Inservice Training Manual is to enable professionals, working with the DISCOVER system, to get comfortable with the technology used in DISCOVER, and to become knowledgeable with the contents of the system. The author describes six critical steps for counselors to follow which will assure a successful implementation of DISCOVER at their site. The manual advises professions charged with implementation to: (1) get comfortable with the technology used in DISCOVER; (2) get knowledgeable about the contents of DISCOVER; (3) communicate this comfort to the appropriate staff members; (4) select a career guidance model for the incorporation of DISCOVER; (5) become an active change agent to implement the career guidance model; and (6) evaluate the outcomes of implementation of the model selected; make adjustments; and use evaluation data to sustain the program.

The DISCOVER Inservice Training Manual comes with a package of materials which includes the Counselor's Manual a training videotape, success keys for each step of the implementation process, references, additional readings, transparency masters, support materials (which can be copied for distribution), and abstracts of research studies.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The author makes very specific, practical suggestions of ways professionals in career development can implement the DISCOVER system in their specific setting. The DISCOVER Inservice Training Manual includes all the various support materials which might assist in the implementation process. Counselors may find the DISCOVER Inservice Training Manual useful not only for gaining an understanding of DISCOVER's contentsand knowledge of the technology, but also as a step by step guide for implementation strategy.

SD

Pyle, K.R., Milburn, L., & Swindel, C.J. (1984). DISCOVER group career counseling manual. Unpublished manuscript.

K. Richard Pyle, The Career Center, University of Texas-Austin

The DISCOVER Group Career Counseling Manual is designed as a training manual for new DISCOVER group leaders. The manual also serves as a planning resource, and it documents the approach to integrating computer applications with human resources. The manual includes a brief summary of research related to computer applications and group counseling in career development, an overview of DISCOVER and basic information about group processes. The description of the DISCOVER Group Program at the University of Texas in Austin contains complete program goals and session by session objectives, together with desired outcomes. Three bibliographies for further reading on computers and group counseling in career development are included in this manual.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The DISCOVER Group Career Counseling Manual can be used by counselors to become aware of group career development concepts, and the integration of the DISCOVER system into existing career development programs. The detailed program goals and objectives can be used by the counselor in choosing activities and selecting the priority to be placed on various aspects within each session.

SD

Rabush, C.M. (1986). Counselor manual: A complete training program for professionals using DISCOVER. Princeton, NJ: American College Testing Program.

ACT: DISCOVER Center, 230 Schilling Circle, Hunt Valley, MD. 21031.

The Counselor manual is designed to enable the counseling professional to become "expert" in the use of DISCOVER and in the methods for incorporating DISCOVER into the ongoing counseling program. To accomplish these goals the manual suggests a three step action plan: (1) get comfortable with the technology; (2) get knowledgeable about the contents of the DISCOVER system so that you can use it effectively with your students/clients; and (3) select a career planning model which incorporates DISCOVER.

Learning activities and exercises are included in the manual to reinforce the information presented in each section. The Counselor manual includes detailed discussion of the theoretical basis of the DISCOVER system, as well as the assessment inventories used in the system, and explains the various data files including: occupational information, colleges and graduate schools, military file, trade and technical schools file, and the financial aid data file. Additionally the manual presents four separate career guidance delivery models which the counselor might choose for their particular implementation plan. Included in the appendix are a glossary of important computer terminology, and references.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The author makes very specific, practical suggestions of ways counselors can implement the DISCOVER system in their specific setting. Counselors may find the Counselor manual useful not only for gaining an understanding of DISCOVER's contents and knowledge of the technology, but also as a step by step guide to enhance the students' use of the system. The Counselor manual may help counselors to improve their implementation strategy. The manual can be used individually or in a group format to acquaint counselors with all aspects of the DISCOVER system.

PD

Dunn, W. 6 & Carr, J. (1984). Planning careers with the help of a microcomputer. Electronic Education, 3, 41-42.

DISCOVER, a computer assisted guidance system (CAGS), developed and marketed by the American College Testing, Inc., is discussed. The article includes a discription of the use of computers in career guidance, a discription of DISCOVER's contents and information on the annual cost of ACT's DISCOVER package, which includes software, manuals and technical support. Resources for further information is included in the 2 page article.

* *

PD

Heppner, M.J. (1985). Overview: DISCOVER II, SIGI, and MicroSKILLS: A descriptive review. Journal of Counseling and Development, 63, 323-325.

This article presents an overview of three computerized career information and guidance systems, including DISCOVER II. DISCOVER II, developed by the American College Testing Service (ACT), consists of four primary units: Self-information, Srtategies for identifying occupations, Occupational information and Searches for educational institutions. Each unit is briefly described.

The self-information unit allows the user to assess interests, work values, and attitudes. Scores from previous assessment instruments such as the SDS, OVIS 1 and 2, Strong-Cambell, Kuder E, DAT, CPP, GATB abd ADSVAB may be entered. Users get information on occupational options that relate to their values, interests, abilities and selected educational level.

Those considering installation of a computer-assisted career information and guidance system are advised to consider cost of the program, compatible hardware, age and experience level of typical users and time needed to complete the program. This three page overview includes a resource to contact for further information on DISCOVER II.

65

PD
Nagy, D.R., & Donald, G.M. (1981). DISCOVER. In D.H. Montross & C.J. Shinkman (Eds.), *Career development in the 1980s* (pp. 150-151). Springfield, IL: Charles C Thomas.

A brief description of the DISCOVER system is presented in this book chapter. DISCOVER is described as a career development program that seeks to teach students how to make decisions in a rational manner.

Modules included in the system are briefly reviewed (Introduction, Clarifying Values, Values and Occupations, Effective Decision Making, Decision Making in Careers, Organization of the Occupational World, Browsing Occupations, Reviewing Interests, and Strengths, Making a List of Occupations to Explore, Getting Information About Occupations to Explore, Narrowing a List of Occupations, and Exploring Specific Career Paths). The program contains fifteen to twenty hours of information and allows students to skip any modules or exercises that are determined to be unnecessary. A review of the process involved in DISCOVER is presented. Fees involved in the program's operation and hardware requirements are discussed. An address for obtaining more information on DISCOVER is provided in this 4 page chapter.

66

PD

Rayman, J.R. (1977). DISCOVER: A computerized careers curriculum. From proceedings of 1977 Conference on Computers in the Undergraduate Curricula, Michigan State University, East Lansing, MI.

Several experts have voiced a need to improve career services and delivery systems available to college and university students. The integration of career development theory and relevant career information into all major college programs has typically encountered resistance from liberal arts faculty members sensitive to programs which may alter their discipline. The DISCOVER computerized career guidance system is presented as an intervention which may facilitate career development outside of the traditional classroom situation.

Capabilities of the computer in the delivery of career information and services are listed and evaluations supporting the use of computers are summarized. DISCOVER is described as an ideal means of delivering a "careers curriculum" to college students.

The content of the DISCOVER system is discussed and the system's administrative module, eleven "main line" modules, and nine informational modules are described. Speculations on DISCOVER°s effectiveness are discussed. References are provided in this 6 page paper.

61

PD
Rayman, J.R. (1981). Computer-assisted career guidance for adults. New Directions for Continuing Education, 10, 85-94.

The DISCOVER computerized career-guidance system and other computerized systems are introduced as improved and alternative career guidance delivery systems designed to meet the career development needs specific to adult learners. Problems which are unique to adult learners are first described and several theories of career development are discussed with respect to this population.

The rapid development of computer technology has contributed to the interest in the potential applications of computers in career guidance. Among the possible benefits of computer delivery systems discussed are the potential to meet the needs of adults and the potential to eliminate research bias.

The DISCOVER computerized career guidance system for college students and adults is described as an attempt to combine contemporary career development theory with the unique delivery capabilities of the computer. Various features of the DISCOVER system are presented, and evaluation evidence suggesting support for the use of computers in the delivery of career services is cited.

The content of the college/adult DISCOVER system is described and various tools and techniques included in the system's twelve fifty-minute modules are mentioned. DISCOVER represents a combination of originally developed interactive dialogue and simulations of instruments and tools used by permission of other developers and of originally developed and borrowed data files. The "main line" modules of the system are schematically diagrammed. Current evaluation efforts and projected development of computer systems are discussed. References are provided in this 9 page article.

68

PD
Rayman, J.R., & Harris-Bowlsbey, J. (1977). DISCOVER: A model for a systematic career guidance program. Vocational Guidance Quarterly, 26, 3-12.

This article discusses how computer applications can facilitate the provision of career guidance services. The DISCOVER system is described in some detail. Evidence suggesting disappointing levels of career planning assistance at all age levels emphasizes the need for improved and increased career guidance services. In many cases counselor-student ratios prohibit one-to-one assistance with career development and the counselor's skills are often inefficiently utilized in such tasks as information-giving and clerical functions, thereby reducing time for providing individualized career guidance. Counselors and administrators are increasingly turning to computer technology in an attempt to meet student needs.

The capabilities of computers are described and evaluations supporting the use of computers in career guidance are summarized. Counselors and administrators are encouraged to use computers to allow counselors more time in performing tasks that require human skills and sensitivity.

The use of computers in guidance is traced across three generations of development. The operation of first generation batch-processing systems and second generation on-line systems for information retrieval are described. DISCOVER is described as a computer-based system representing a new third generation of computer use in career guidance.

DISCOVER is a systematic career guidance program designed to enhance normal career development from grades 7 through 12. The system is described as a combination of originally developed interactive dialogue and simulations of instruments and tools used by permission of other developers, and of originally developed and borrowed data files. The content within the system's "main line" modules is described. Advantages of DISCOVER°s approach are discussed. References are provided in this 9 page article.

PD
Rayman, J.R., Bryson, D.L., & Day, J.B. (1978). Toward a systematic computerized career development program for college students. Journal of College Student Personnel, 19, 202-207.

This article attempts to define some of the career development needs of college and adult populations, to present a conceptual framework for the development of career programs, and to suggest an innovative medium of delivery for providing comprehensive and systematic career information and guidance.

Among the unique problems often experienced by adult students are : 1) limitations of some students to certain groups of occupations because of a need for remedial course work; 2) age biases or lack of understanding for the concerns of older students; and 3) a lack of confidence in study skills. Several conceptualizations of the career development process are reviewed. The authors, suggest that a comprehensive career development program should include learning experiences that develop career awareness.

The development and assets of various computer-assisted forms of vocational guidance are discussed. DISCOVER is introduced as the latest computer-based career guidance program. The DISCOVER system, currently under modification for use by two- and four-year college populations under an Exxon Education Foundation grant, provides assistance in the areas of: self-information, including values, interests, and competencies; exploration of occupations; teaching and low risk practice of decision-making; relationship of self-information to occupational alternatives; and information assistance with choice implementation. A proposed field trial of the modified DISCOVER system is discussed. References are provided in this 4 page article.

PD
Shatkin, L. (1980). DISCOVER. In L. Shatkin, (Ed.), Computer-assisted guidance: Descriptions of systems, pp. 46-51. Princeton, NJ: Educational Testing Service. (ERIC Document Reproduction Service No. ED 187 851)

Laurence Shatkin, SIGI Office, Educational Testing Service,
Princeton, NJ 08541

The DISCOVER computer-assisted guidance system is described with respect to the system's scope and content, structure, and procedures. Sources of the system's information are specified and a schedule for updating information is discussed. An address from which further information may be obtained is given.

* *

PD
Shatkin, L. (1982). DISCOVER II. In L. Shatkin, (Ed.), Guidance on the microcomputer: Current software compared, pp. 22-26. Princeton, NJ: Educational Testing Service.

Laurence Shatkin, SIGI Office, Educational Testing Service,
Princeton, N.J. 08541

This document describes a few distinctive features of seven computer-assisted guidance systems (CAGS), including DISCOVER II, developed by the American College Testing Program. The scope and content of DISCOVER II are described. DISCOVER's self-assessment module allows the user to take the UNIACT interest inventory and/or Donald Super's Work Values Scales and/or rate themselves on their work-related aptitudes. Occupations are located via user's interests, aptitudes and/or values, or via user preferences for various occupational characteristics. The author concludes that DISCOVER presents a variety of methods of matching the user to occupations without suggesting that any method is more useful than any other. An authoring language is provided so that local information may be added, thus giving the system flexibility. References are provided in the 33 page document.

PD
Isaacson, L.E. (1985). Computer systems in career counseling. In. L.E. Isaacson, Basics of career counseling (pp. 345-349). Boston, MA: Allyn and Bacon.

The chapter on computer systems in career counseling provides an overview of the DISCOVER program. DISCOVER was developed as a systematic career-guidance program to assist in career development activities at the secondary school level. The system consists of several modules, an explanatory package, and twenty others that fall into three groups: 1) Values and decision-making education; 2) Relating and exploring occupations; and 3) Career planning. All modules provide interaction with the user. Some modules incorporate materials developed by others, but most are original in nature, developed primarily by JoAnn Harris-Bowlsbey. DISCOVER is far more comprehensive than the previous online retrieval systems such as CIS and GIS. The system is designed to assist in each step of the career-counseling process and assumes that counselors will not have sufficient time to provide the individual help that clients need. Isaacson concludes that DISCOVER is primarily a self-contained career-guidance system which makes it highly attractive to those settings where counseling services are staffed inadequately. References are provided at the end of the chapter.

PD
Maze, M., & Cummings, R. (1982). Analysis of DISCOVER. In M. Maze, & R. Cummings, *How to select a computer-assisted career guidance system* (pp. 97-107). Madison, WI: University of Wisconsin Vocational Studies Center.

The mainframe version of DISCOVER is a comprehensive computer-assisted career guidance system (CACGS) composed of 21 modules which contain didactic material, several self-assessment inventories, and extensive information files. DISCOVER is an eclectic system, combining John Holland's *Self-Directed Search*, American College Testing Program's "World of Work Map," Martin Katz's work values, and JoAnn Harris-Bowlsbey's concept of systematic guidance. This chapter discusses the system goals, the didactic, assessment, and informational components of DISCOVER, as well as the internal structure and system management requirements.

DISCOVER attempts to: (1) increase decision-making skills; (2) increase vocational maturity, (3) increase specification of career plans; (4) offer information about occupations and educational institutions; and (5) increase the user's self-knowledge concerning interests, abilities, and values. Most modules in DISCOVER begin with didactic material. The content of the didactic material forms the structure around which DISCOVER is built, and tends to be interactive. The assessment components, (the *Values Game*, the *Self-Directed Search*) are briefly described.

The authors cite published literature throughout the chapter. They conclude that the systems' instructions are comprehensive, and that the flexibility of the system allows the user to skip modules or parts of modules. The authors state that research indicates that DISCOVER helps clients to increase in vocational maturity. References are included for further reading.

PD

Samai, P.G. (1985, April 1). Selection of a computerized guidance system: A review of DISCOVER and SIGI. Paper presented at the annual meeting of the American Educational Research Association, Chicago, Illinios.

This paper reviews the process of selection of a computerized guidance system for a multi-campus, heterogeneous college. The author describes (1) the criteria for selecting a career guidance program appropriate for a particular student population,
(2) explains the main features of the two systems considered--DISCOVER and SIGI, and (3) reviews the basis for making a final decision.

The two systems, DISCOVER and SIGI, are compared and evaluated in terms of contents, internal structure, hardware and cost, and training and support provided by the system developers. References are provided in this 13 page document.

* * *

PD

Sampson, J.P.,Jr., Peterson, G.W., Domkowski, D., & Reardon, R.C. (1986). A differential feature-cost analysis of DISCOVER for Adult Learners and SIGI PLUS (Technical Report Number 4). Unpublished manuscript, The Florida State University, Project LEARN - Phase II, Tallahassee.

DISCOVER for Adult Learners (DISCOVER AL) and SIGI PLUS are newly developed computer assisted guidance systems designed to assist individuals in making career decisions. The purpose of this report is to provide an objective and current descriptive comparison of the features and costs of these two systems using the following rubrics: (a) user friendliness (human factors), (b) information for career decision making, (c) decision processes on which programs are based, (d) support materials, and (e) limitations.

The contents of this report consist primarily of a complete descriptive listing of the features and costs of DISCOVER AL and SIGI PLUS, gathered from the manuals provided by the respective firms, American College Testing Program (DISCOVER AL) and Educational Testing Service (SIGI PLUS), interviews with ACT and ETS staff members, as well as the collective experiences of the authors as they themselves and their clients interacted with the systems.

The authors note that the report is not intended as a detailed report, but that it is the result of the authors' reviews only, not that of the systems' developers; and is not intended as a promotional or marketing device for either system. The reader is strongly encouraged to examine future research reports to ascertain the relative merit of the features and costs of the two systems. Raw data are presented in data summary tables. References are available.

PD
Splete, H.H. (1984). Computerized career guidance systems and career counseling services. Unpublished manuscript, Oakland University, Adult Career Counseling Center, Rochester.

This report provides an overview of the development and implementation of computerized career guidance systems at Oakland University through the first year of operation of the Adult Career Counseling Center (January - December, 1983). The report includes a brief history of the development of the program and the Adult Career Counseling Center; a description of the services provided including the computerized career guidance systems (DISCOVER II and SIGI); a description of the 1,659 clients who used the center during the period of the report; an overview of the center's training programs; evaluation summaries of the services provided by the center; an overview of three research studies; and an indication of future plans.

The information presented in this document was gathered from manuals provided by the respective firms, American College Testing Program (DISCOVER II) and Educational Testing Service (SIGI), data collected during the period of the report, as well as the collective experiences of the authors and their clients. Data are presented in summary tables. The appendix includes a copy of the survey research instrument reflecting user reaction to DISCOVER II.

PD

Splete, H.H., Elliott, B.J., & Borders, L.D. (1985). Computer-assisted career guidance systems and career counseling services: Second annual report. Unpublished manuscript, Oakland University, Adult Career Counseling Center, Rochester.

This report provides an overview of the continuing development and use of computer-assisted career guidance systems at Oakland University during the second year of operation of the Adult Career Counseling Center (January - December, 1984). The report includes a brief history of the development of the program and the Adult Career Counseling Center; a description of the computer-assisted services provided (DISCOVER II and SIGI); a description of the 1,211 clients who used the center during the period of the report; an overview of the center's training programs; an overview of three research studies conducted in the center; and an indication of future plans.

The information presented in this document was gathered from manuals provided by the respective firms, American College Testing Program (DISCOVER II) and Educational Testing Service (SIGI), data collected during the period of the report, as well as the collective experiences of the authors and their clients. Data are presented in summary tables. The appendix includes guidelines for selecting a career, and a listing of essential resources for the career counselor.

PD

Wilhelm, S.J. (1978). Computer-based guidance systems: Are they worth it? Journal of College Placement, 38, 65-69.

This article describes five computer-based career guidance systems which may be applicable on the college level: the Career Information System (CIS), the Computerized Vocational Information System (CVIS), DISCOVER, the Educational and Career Exploration System (ECES), and the System of Interactive Guidance and Information (SIGI).

DISCOVER is divided into two versions: the grade 7-12 version and the college-level version. The college-level DISCOVER system design is based upon the assumption that career development is a process which takes place throughout life and that certain systematic interventions can streamline this process, making it more efficient. DISCOVER is a combination of original, interactive dialogue and simulations, of instruments and tools used by permission of other developers, and of original and borrowed data files.

The author quotes published literature, and concludes that computer-based systems are continuously being revised and updated. It is the responsibility of the individual institutions' staff to determine if computer-based career guidance systems are worthwhile on their campuses. References are available, as are addresses, for obtaining additional information on the five systems discussed.

ED
GARIS, J.W. (1982). The integration of the DISCOVER computer-based guidance system in a college counseling center--its effects upon career planning. University Park, PA: Pennsylvania State University, Career Development and Placement Center.

Career Development and Placement Center, The Pennsylvania State University, 408 Boucke Building, University Park, PA 16802

During the Fall term, 1981 the Career Development and Placement Center at the Pennsylvania State University integrated the DISCOVER computer-based career guidance and support system into existing career counseling services. A study examining the effects of DISCOVER upon student career planning progress was conducted as an initial project evaluation. The study randomly assigned 67 undergraduate students seeking counseling into one of four groups: use of the DISCOVER computer-assisted career guidance system, individual career counseling; individual career counseling with supporting DISCOVER use, and a control group. Subjects were allowed to interact with their assigned treatment as frequently as they wished during a five week period. Subjects completed both a pretest and posttest with the Survey of Career Development (SCD), a self-report questionnaire of confidence, and Progress in Educational/Career Planning, and Alternative Generating and Information Gathering Behavior Log, and the College Form of the Career Development Inventory.

The general trends of the results lead the investigator to conclude that (1) all treatment groups produced positive effects upon subjects' self-rated progress in educational/career planning, (2) both DISCOVER use only and individual career counseling only were equivalent in exerting a positive influence upon subjects' self-rated progress in educational/career planning, (3) the DISCOVER use treatment contributed to greater subject use of the career library than the counseling only condition, (4) the career counseling treatment was more effective than DISCOVER in stimulating subject contacts with career resource persons of services which could provide further assistance with educational/career planning and (5) treatment groups indicated no effects upon competency in decision making or knowledge of the occupational world.

A second study examining student attitudes and responses toward DISCOVER system use was conducted during the winter term, 1982. In this study, 90 students who had actively used DISCOVER were asked to complete a questionnaire regarding their reaction to the system. Many of the findings of the winter term attitudinal survey supported the earlier findings of the fall evaluation. The investigator suggests that these findings add credibility to the further integration of computerized guidance systems in college career counseling centers.

A copy of the literature review and complete bibliography is available upon request. Statistical data and a copy of all instruments used is provided in the 79 page evaluation.

ED
Glaize, D.L., & Myrick, R.D. (1984). Interpersonal groups or computers? A study of career maturity and career decidedness. Vocational Guidance Quarterly, 32, 168-176.

Computer-assisted guidance programs and small group counseling interventions are described as two promising methods to assist students in career planning. This study examined the effectiveness of a computer-assisted approach and a group counseling approach, as well as their combined use in the facilitation of career maturity and career decidedness. The DISCOVER computer-assisted guidance system was selected for use as a comprehensive computer-assisted approach and the Vocational Exploration Group (VEG) was selected for use as a group counseling approach. A description of both interventions is provided.

A randomized control-group posttest only research design was used in each of five participating high schools. One hundred and twenty 11th-grade students from five senior high schools in Orange County, Florida, participated in the study. Twenty four students in each school were assigned to one of four experimental conditions; (1) VEG alone; (2) DISCOVER alone; (3) VEG plus DISCOVER, and (4) control group.

Four criterion measures were used in this study: (1) the Career Maturity Inventory (CMI) Attitude Scale, Form A-2 was used to assess career maturity; (2) the Career Decision Scale (CDS) was used to measure career decidedness; (3) career-goal-directed behavior (CGDB) was measured by counting the number of visits students made to a school's career resource center during two weeks following the conclusion of the guidance intervention period; and (4) a student attitude inventory (SAI) developed by the authors was used to measure attitudes concerning self, school, and the world of work.

The Finn Multivariate Analysis of Variance was used to analyze the data. Significant differences (.05 level) occurred for each of the three guidance groups when compared to the control group on measures of career maturity and career decision making, however no significant differences occurred among the three guidance groups. No significant differences (.05 level) were found among the four conditions on the SAI or CGBD.

The authors were unable to recommend one approach over the other on the basis of results from the study. Operational requirements and ways in which the programs may be used are discussed. References are provided in this 8 page article.

79

ED
Rayman, J.R., Bryson, D.L., & Bowlsbey, J.E. (1978). The field trial of DISCOVER: A new computerized interactive guidance system. Vocational Guidance Quarterly, 26, 349-360.

The DISCOVER Foundation conducted the field trial and evaluation of the DISCOVER computer-based career guidance system in order to investigate the reactions of students and parents to DISCOVER; the effects of DISCOVER use upon students; and to make recommendations for DISCOVER system improvement.

Forty-eight experimental and forty-eight control participants were ultimately selected for the field trial. The experimental and control groups were matched on the variables of grade level, sex, and reading achievement quartile. During the course of the study group sizes were reduced to thirty.

Among the experimental measures used were a self-report form which measured reactions to material in modules, occupational exploratory activities and general reactions to the system. Other measures included a DISCOVER Student Questionnaire; The American College Testing Program's Assessment of Career Development (ACD); the Career Development Inventory (CDI), Part I and Part II; and a 15-item questionnaire about DISCOVER administered with the ACD. A questionnaire was sent to parents of students in the experimental groups in order to assess reactions to their children's use of the DISCOVER system.

Comparisons were made between experimental and control group means on the ACD and CDI and statistical tests were performed. Results from student questionnaire responses, parent questionnaire responses, evidence of system effects, structured interviews, and informal observations of experimental participants are discussed.

The results supported the hypotheses that reactions to DISCOVER would be favorable. Data from the DISCOVER questionnaire supported the hypothesis that students using the system would show a significant move toward specification of both educational and vocational goals. No statistically significant differences were found between experimental and control groups for either high school or junior high school students on any of the scales of the ACD or CDI.

Small sample sizes, poor controls, and inconsistent technical operation are discussed as limitations of the field trial. Many of the modifications suggested were incorporated in the final version of DISCOVER. Statistical data and references are provided in this 11 page report.

ED
Savin, G. (1978). (Summary of DISCOVER survey-1978).
Unpublished raw data.

Office of the Superintendent, School Town of Highland. 9145
Kennedy Avenue, Highland, Indiana 46322-2796.

The School Town of Highland reported on the use and acceptance of the DISCOVER computer-assisted guidance system at Highland High School, (Highland, Indiana), the first high school in the country to implement the DISCOVER PROGRAM. one hundred and fifty upper level students respondd to the 10-item DISCOVER Survey. Students generally rated DISCOVER favorably. A reprint of the questionnaire showing the breakdown of student responses for each item in the form of percentages is provided.

Some general comments solicited from teachers, cunselors, parents and the school principal are also presented. Teachers, administrators and parents liked and supported the program. Operational problems which emerged during the evaluationa re noted. The report containes a cost per student usage estimate of $3 to $5. An evaluation of the true costs of the program is recommended in this 5 page document.

* *

ED
Savin, G. (1979). The DISCOVER Program in Highland, Indiana.
Unpublished manuscript.

Pupil Personnel Services, School Town of Highland. 9145 Kennedy
Avenue, Highland, Indiana 46322-2796.

This manuscript compares the findings from the first and second evaluations of the DISCOVER program conducted at Highland High School (Highland, Indiana), during the school years of 1977 and 1978. Both years a simple questionnaire was responded to by DISCOVER users. The manuscript includes the questionnaire as well as the data obtained. The students' positive reaction to the use of the computer dropped from 73% the first year to 51% in 1979. Summary of conclusions drawn from the two evaluations is presented in this 9 page manuscript.

81

ED
Savin, G. (1980). (DISCOVER report of usage--1979-1980).
Unpublished raw data.

George Savin, Pupil Personnel Services, School Town of Highland,
9145 Kennedy Avenue, Highland, Indiana 46322-2796.

This manuscript reports findings from the third evaluation of the DISCOVER program conducted at Highland High School (Highland, Indiana), during a 30 week period from 1979 to 1980. The report includes data on DISCOVER usage and summaries of reactions from randomly selected DISCOVER users. Reactions were generally positive and students indicated they liked the amount of information they could obtain, the fast answers to questions, and the easy to use format. Selected teacher reactions to the system obtained through letters and personal communications are cited. A summary of conclusions drawn from the evaluation is presented in this 5 page manuscript.

82

ED
Chapman, R.H., & Greenberg, E.M. (1985). DISCOVER: Some feedback from users. Unpublished manuscript.

The Colorado CAEL Center, located at Loretto Heights College in Denver, Colorado, made DISCOVER for Secondary and Postsecondary Institutions available to individuals in the community and in the college on a fees-for-services basis. This report describes the demographic characteristics of the user population and summarizes user feedback. One hundred thirty (130) DISCOVER users over a thirteen month period, from November, 1983 through December, 1984, filled out a "feedback" instrument upon completing the DISCOVER program. The instrument, a brief self-administered questionnaire, was initially designed by Formative Evaluation Research Associates (FERA). Colorado CAEL Center personnel modified the FERA instrument somewhat for this study. Data analysis was done using a software program written specifically for this project.

The authors describe the demographic characteristics of DISCOVER users, present their reasons for using DISCOVER, and the user's ratings of the software. Although the individuals in this study ranged in age from 16 to 60 years, 43% were in their 30's, with the median age being 31 years. Sixty-nine percent were female, 50% were single individuals, 23% were currently attending college, 26% had baccalaureate degrees and 21% had completed a graduate degree. Most of the individuals in this sample used DISCOVER to gain more information and insight regarding themselves, careers, and jobs. Ninety percent of the users said DISCOVER met their expectations "well" or "very well," and that the program was well organized, relatively useful, enjoyable, clarifying, and somewhat challenging. The authors conclude that DISCOVER can be a useful tool in the career exploration process. They recommend combining the "high tech" of DISCOVER with the "high touch" of personal orientation and one-to-one assistance.

A copy of the feedback instrument is included in the appendix. Statistical data are presented in graph form in this 15 page document.

ED
Garis, J.W., & Swails, R.C. (1983, May). Computers and career counselors: A comparison of their effects upon students' career planning progress. Paper presented at the College Placement Council National Meeting.

The purpose of this study was to consider the effects on career planning of the DISCOVER computer-based career guidance and counselor support system for college students. Sixty-two (62) subjects who were first and second year college students were assigned to one of three treatment groups: (1) DISCOVER use alone, (2) individual career counseling only, (3) combined DISCOVER/ counseling use. A wait/no treatment control condition was also included. Treatments were unstructured in that subjects were able to engage in their treatment as much as desired during a five-week period. Pretests and posttests were completed by all subjects. Measures of progress in career planning included the Survey of Career Development, a Confidence and Progress in Educational/Career Planning Questionnaire, Alternative Generating and Information Seeking Behavior Log, and the CU Form of the Career Development Inventory.

Analysis of variance and covariance indicated a significant treatment group effect ($p < .01$) on 11 of the 14 scores of progress in career planning. The following results were observed: (a) all treatments produced positive effects upon subjects' career planning, (b) both DISCOVER use only, and individual career counseling only were equivalent in exerting a positive influence upon career planning process, (c) the DISCOVER use treatment contributed to greater use of the career library than the counseling only condition, (d) the career counseling treatment was more effective than DISCOVER use in stimulating contacts with career resource persons, and (e) treatments indicated no effects upon competency in decision making or occupational knowledge.

The authors conclude that optimal effects on career planning progress are achieved through paired career counseling and DISCOVER use. DISCOVER stimulates use of other modes of career information. Data are summarized in a series of tables in this 9 page document.

84

ED
Kapes, J.T., Borman, C.A., Garcia, G.,Jr., & Compton, J.W. (1985, January). Using microcomputer based career guidance systems in a university setting: Reaction data from users. Paper presented at the annual meeting of the Southwest Educational Research Association, Austin.

This study presents user reactions to two computer-assisted career guidance systems, DISCOVER and SIGI, on the characteristics of ease of use, self-assessments used, quality of information provided, and perceived total effectiveness. Two distinct groups of Texas A&M students were used in this study. A single undergraduate class of students enrolled in a career development class in the Fall Semester, 1984, was studied to assess the reaction of undergraduate students. The second group of subjects, which consisted of 24 graduate students enrolled in educational and occupational information course, was studied to assess the reactions of counselors in training.

All participants were introduced to both DISCOVER and SIGI systems which were delivered via IBM XT microcomputers, and then half were assigned to use one system and half the other. The instrument used to collect reaction data from subjects in this study was developed by the project staff based on characteristics selected for the study. Biographical data was also collected. The SPSSx statistical package was used to compute frequency/percent, means, chi-square, independent t and dependent t tests for all items in the four characteristic domains. Among the undergraduate students there were no significant differences in the ratings of the two systems with the exception that DISCOVER received a higher rating (P >.05) on "Opportunity to make changes within the system." There were no significant differences in the ratings of the two systems from counselors in training. The data from both groups of students were combined. Almost 1/3 of the students felt that the computer-based guidance systems exposed them to new information about themselves, while 2/3 of the students felt the systems confirmed what they knew about themselves.

The authors conclude that the results of this study indicate that the undergraduate students and counselors in training gave both DISCOVER and SIGI mostly high ratings, and there was very little difference in the ratings of the two systems. This study simply evaluated user attitudes toward each system through the use of a post use questionnaire. The questionnaire is included in the appendix, as are statistical data summaries. References are included in this 20 page document.

ED
Kapes, J.T., Borman, C.A., & Kimberly, R.M. (1985, April). Evaluation of microcomputer based career guidance systems with college students: SIGI and DISCOVER. Paper presented at the annual meeting of the American Educational Research Association, Chicago.

This report compares the effectiveness of two microcomputer based career guidance systems, the System for Interactive Guidance and Information (SIGI), produced by the Educational Testing Service, and DISCOVER, produced by the American College Testing Program. Specifically the study attempted to determine how college students who use these systems change in terms of the following career development measures: 1) Career Development Inventory, 2) Career Decision Scale, 3) Survey of Career Development, and 4) Self-assessment of Confidence and Progress in Educational/Career Planning. Additionally, the study assessed whether students who had used either system rated the systems differently in terms of ease of use, self-assessment, quality of occupational/educational information, and perceived total effectiveness.

A single undergraduate class enrolled in a career development course was used in the study. The 50 students were randomly assigned to either SIGI or the DISCOVER system and were expected to devote approximately one class period per week over a two month period on the system to which they were assigned. The SPSSx statistical package was used to compute frequency/percent, means, chi-square, independentt-tests and dependent t-tests, and multiple regression analysis.

Analysis of the data led to the conclusion that the Career Development course with either SIGI or DISCOVER produced a significant change ($p > .05$) in career development attitude but not in career development knowledge, at least as it is measured by the CDI. There were significant differences found between the pre- and post-test scores for the career development measures used in this study. However, the authors caution that the effects of the computer-based guidance systems could not be separated from the effects of the career development course that the students were taking. There were no significant differences in the ratings of the two systems with the exception that DISCOVER received a higher rating ($P > .05$) on "Opportunity to make changes within the system."

The authors discuss the limitations of their study in terms of the limitations of the instrumentation used, and and the confounding effects of CACGS used with the career development course. Statistical data is presented in data summary tables. Sample reaction questionnaires and references are included in this 26 page document.

ED
Marin, P.A. (1984). The differential effectiveness of computer-based career counseling intervention and decision making style on progress in career decision status. Unpublished doctoral dissertation, University of Michigan, Ann Arbor.

This research investigated the use of a computer-based guidance system by adults in order to differentiate between the effectiveness of the computer-plus-counselor and the computer-only career guidance intervention methods. The interaction between decision making style of subjects and the intervention methods was also investigated.

Subjects were 188 U.A.W. volunteers from General Motors Truck and Bus in Pontiac, Michigan, who were high school graduates between 23-24 years of age. They were randomly assigned to a computer-plus-counselor method, a computer-only method, or a control-deferred treatment condition. The computer-plus-counselor method combined an individual counseling situation with the use of a computer-based guidance system, DISCOVER II. Subjects completed the General Information Survey, which provided demographic information and the Assessment of Career Decision Making (Decision Making Style subscale, DMS) prior to the pretests. Pretest and posttest instruments were Assessment of Career Decision Making (Occupation subscale) (ACDM-O), Career Decision Scale (CDS), and Occupational Alternatives Questionnaire (OAQ).

Analysis of variance and chi-square results showed no evidence of significant differences in the pretest values on the criterion measures among the intervention method groups. Significant differences were found among the intervention methods in the ACDM-O and the CDS posttest and gain values as well as in the OAQs gain values. Subjects were categorized into combined decision making style categories: rational, intuitive, and dependent. The interaction of DMS and the intervention method was investigated by comparing the mean values on the ACDM-O, CDS, and OAQs. The results did not show a significant difference in the criterion measures by decision making style.

Based on the progress shown in the three criterion measures, the author concluded: 1) computer-based guidance is effective for adults, 2) the computer-plus-counselor intervention method is more effective than the computer-only intervention method for adults. Additionally, there is no evidence that any of the individual decision making styles affect progress by interacting with the intervention method. Literature review, statistical data, and references are included in this document.

ED
Miller, M.J., & Springer, T.P. (1986). Perceived satisfaction of a computerized vocational counseling system as a function of monetary investment. Journal of College Student Personnel,27, 142-146.

The purpose of this study was to analyze the relative impact on perceived satisfaction with a computerized system (DISCOVER) as a function of monetary investment. Sixty-one undergraduate students enrolled in an introductory psychology class at a medium-sized southern university voluntarily participated in the study. The participants were given a general introduction to DISCOVER and subsequently assigned to one of two experimental groups or to a control group. Efforts were made to distribute students equally on the basis of their demographic characteristics. Participants in the experimental groups were told they would be required to pay a nominal fee for use of the DISCOVER system (e.g., $20.00 in Group #1, $5.00 in Group #2). Participants in the control group received the treatment free of charge. Computer time was held constant at one hour, with all participants completing only Section I (self information) of DISCOVER. After completing the evaluation form, subjects were allowed further access to the computer. Debriefing included returning to subjects their original monetary investment.

Data were collected on one modified research instrument, the Feedback Questionnaire (FQ). The mean scores for all three groups were found to be in the positive direction. An analysis of variance was conducted across treatment groups for each of the 14 items on the FQ. No significant differences among the three groups were found. In addition, no significant groups by sex or by classification interactions were found. Although no significant differences were found among the three groups, the authors state that in general, DISCOVER was rated very positively. They conclude that a computerized vocational counseling system such as DISCOVER is a worthwhile counseling intervention that can help to meet the career exploration needs of college students.

The authors suggest that the study was not designed to provide sufficient sensitivity to yield significant results. Data tables contain the statistical summary of the data from the three groups. References are included in this report.

ED
Penn, P.D. (1981). Differential effects on vocationally-related behaviors of a computer-based career guidance system in communication with innovative career exploration strategies. Unpublished doctoral dissertation, University of Minnesota, Minneapolis.

The purpose of this study was to determine the effectiveness of a computer-based career guidance system, DISCOVER, on several vocationally related dependent variables as compared with a traditional career counseling model. The vocationally related variables were described as occupational information, career planning information, career planning involvement, decision-making skills, decision-making style, and exploratory behavior. The secondary purpose of the study was to observe the relationship between vocational maturity, sex, and the selection of a vocational preference as categorized by Holland's personality theory of vocational choice.

A sample of 120, non-high school graduates, who were enrolled in the Adult Basic and Continuing Education Program of the St. Paul Public Schools, were randomly assigned to one of four age balanced groups: 1) DISCOVER alone, 2) DISCOVER in conjunction with the presentation of "Lifestyles" filmstrip, and 3) DISCOVER in conjunction with the Psychosocial Visit Exploration Strategy (an interview procedure), or to a control group which received structured traditional career counseling which included the administration and interpretation of the Career Assessment Inventory, and the use of the Occupational Outlook Handbook, and the Dictionary of Occupational Titles. Data were analyzed using two-way analysis of variance and chi square. Descriptive statistics were also reported.

There were no significant differences between the DISCOVER groups and the traditional group for the dependent variables except on career planning knowledge for the 22-24 year old subjects in the DISCOVER with Psychosocial Visit group, which scored significantly higher ($p > .05$) than the subjects in the other age/treatment groups. There was no relationship between vocational maturity and occupational preferences for this sample. The selection of initial occupational preference was significantly related ($p > .05$) to the sex of the subject, and this relationship did not change with the presentation of computer-based career guidance. The authors conclude that for these subjects, DISCOVER affects certain vocationally-related behavior, and that vocational maturity may be independent of occupational preference as categorized by Holland.

Data tables contain both raw and statistical data summaries. Literature review and references are contained in this 314 page document.

ED

Rozman, F.E., & Kahl, M.D. (1984). Improving counselors' delivery of career guidance/instructional services through computer technology. Unpublished manuscript. Millerville University, The Career Planning & Placement Center, Millerville.

This document presents the results of a study involving two populations - one at the university level and the other at the high school level. The high school study (A) and university study (B) are reported separately.

A. HIGH SCHOOL STUDY

The purpose of the high school study was to examine the differential effects of computerized career guidance (CACG) and directive counseling on career maturity and career decision making in students, and to assess changes in overall career guidance services. Subjects chosen for this study consisted of 386 high school juniors enrolled in five public high schools and one private girls school. All subjects were both randomly selected and randomly assigned to one of three study groups at each school: (1) DISCOVER/Directive Counseling; (2) DISCOVER Use Only; and (3) a no-treatment control group. The DISCOVER/Directive Counseling subjects were scheduled to spend 3 to 4 class sessions on the DISCOVER II computerized career guidance system and participate in a counselor selected form of directive counseling. The DISCOVER Use Only subjects received 3 to 4 class sessions of DISCOVER II use (without any counseling). The wait/control subjects were administered the pre and posttest Career Development Inventory (CDI), and adhered to the prestudy guidance routine.

Descriptive and evaluative data were gathered using the Technology Grant Questionnaire, Counselor Attitude Survey, counselor Guidance Delivery Model, and on-site observations to assess effects on counselor and method of career guidance delivery. The CDI, DISCOVER II user on-line evaluation data and the Career Development Survey of Activities were used to assess impact of CACGS on students. Results indicate groups exposed to DISCOVER II scored significantly ($p >.05$) higher than non-treatment control subjects on the CDI. When combined with some form of directive counseling, subjects demonstrated a higher degree of career maturity than those using DISCOVER II alone. The authors conclude that DISCOVER II has a positive effect on career maturity. As a result of using DISCOVER II in the delivery of career guidance services, counselors in the six study schools exhibited a more positive attitude on a majority of attitude survey items. Observers noted an increase in the use of standardized tests, but few other changes as a result of incorporating CACGS in the schools.

The authors recommend that DISCOVER II should be extended for use with all high school students as an on-going diagnostic counseling procedure to enhance the students' career development process at different stages in that sequence of growth. The appendix includes copies of all study instruments as well as statistical data summary tables.

90

ED
Sampson, J.P., Jr., Shahnasarian, M., & Reardon, R.C. (1986). A national comparison of the use of DISCOVER and SIGI: Technical report No. 2. Unpublished manuscript, Florida State University, Project LEARN--Phase II, Tallahassee.

Clearinghouse for Computer Assisted Guidance Systems, c/o Dr.
J.P. Sampson, Jr., 215 Stone Building, The Florida State
University, Tallahassee, FL 32306-3001.

This report describes the results of a nationwide comparative study of the 677 sites using DISCOVER or SIGI as of June 1984. Software-based and institutionally-based factors influencing system use were explored. The former included theoretical bases, ease of software usage, and developer's implementation assistance, while the latter included staff competence, organizational dynamics, financial resources, clientele, implementation plan, and system integration with other activities and facilities.

The sample included 408 respondents (60.3%) of those surveyed. Multivariate log-linear models were used to analyze data in five areas of system use, and univariate analyses were used in two areas. Results suggested that institutionally-based factors, not software-based factors, were largely determining how DISCOVER and SIGI were used. However, it was noted that software-based factors, such as system theory bases, might be emphasized more by researchers, developers, and practitioners in order to maximize the impact of computer-assisted career guidance systems.

The report includes 10 tables and one appendix. The authors acknowlege the support and assistance of personnel at the American College Testing Program and the Educational Testing Service in completing this research.

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ED

Shahnasarian, M. (1985). Use of a computer assisted career guidance system with prior schematic cognitive structuring. Unpublished doctoral dissertation, The Florida State University, Tallahassee.

and

Shahnasarian, M., & Peterson, G.W. (1986, April). The effect of prior cognitive structuring using a computer assisted career guidance system. Unpublished manuscript, The Florida State University, Project LEARN - Phase II, Tallahassee. (also a Paper presented at the annual meeting of the American Educational Research Association, San Francisco)

This study examined the effect of a cognitive structuring intervention designed to prepare subjects for the DISCOVER CACG system. The study included 3 groups of 30 subjects who sought career guidance services at a university career center. A card sort task designed to examine subjects' cognitive mapping of the occupations in the world of work and an instructional videotape presenting Holland's (1985) world of work schema were developed for the study. Subjects received one of the following treatments before using DISCOVER: 1) videotape and card sort, 2) card sort only, 3) neither treatment (control group).

Pretest and posttest instruments included the Occupational Alternatives Question, the Vocational Identity Scale of the My Vocational Situation, and the Occupational Grouping Task (the card sort task developed for this study). Analysis of variance, Kruskall Wallis, and the chi-square results showed that subjects who had displayed evidence of assimilating Holland's schema via the videotape did not differ significantly from subjects who did not view the videotape on measures of occupational certainty, vocational identity, differentiation of occupational representation system, nor stability of occupational representation system. However, in 2 of the 3 analyses, F-tests of variances associated with pretest and posttest measures by group indicated that the cognitive structuring intervention had the effect of congealing subjects' cognitive mapping of the world of work.

The results are discussed from the perspectives of information processing theory and implications for career guidance practice. Literature review and references are included in this document.

SIGI Abstracts

93

TS
Chapman, W. (1983). A context for career decision making (NIE
Contract No. 400-79-0020). (Research Rep. No. RR-83-13).
Princeton, NJ: Educational Testing Service.

SIGI Office, Educational Testing Service, Princeton, NJ 08541

This report proposes a context for career decision making. The conceptual framework of the author's thesis is based on the premise that career guidance resembles instruction in that it aims to provide the acquisition of knowledge, the development of understanding and the mastery of competencies, but differs in that a substantial portion of the knowledge must be derived from the learner himself. Decision makers are assumed to be part of the career decision making context.

An analysis of the relationship between inputs to individual decision making and dimensions of occupations is made. The decision-maker has values, aptitudes, and resources relevant to the decision. The occupation has the capacity to satisfy certain values (satisfactions), and demands certain aptitudes for performance (requisites) and expenditures of resources for attainment (investments).

The goals, payoffs, and risks associated with making career decisions are explored. The author explores several reasons why it is difficult for decision-makers to maximize payoff while minimizing risk.

The role of information in making decisions among occupational options is examined and several applications of the context are presented. Applications described include the development of a curriculum for career decision making, improvement of occupational information, determination of important elements that should go into a decision, and improving decision making. References are provided in this 27 page report.

74

TS
Katz, M.R. (1969). Can computers make guidance decisions for students? College Board Review, 72, 13-17.

SIGI Office, Educational Testing Service, Princeton, NJ 08541

The rationale, concepts, assumptions, and convictions that underlie the computerized System of Interactive Guidance and Information (SIGI) are examined in this article. SIGI's aim is to assist college students in their career decision making. The model for dialogue between computer and student is described.

SIGI is based on a humanistic rather than mechanistic ethic. The system is designed to help students master the strategies for rational behavior in the face of uncertainty. Tenets of trait-and-factor approaches to career guidance are critically reviewed, and an argument for emphasizing process rather than content in decision making is proposed. The author suggests that students can be taught to make some decisions that lead - with a high degree of probability and with low risk - to desired outcomes.

Several ways in which personal values can be examined are discussed. The author argues that systematic examination and exploration is necessary in order for individuals values to be understood. The model developed in SIGI to help students become aware of the range of their personal values is outlined.

75

TS
Katz, M.R. (1968). Learning to make wise decisions. Educational Testing Service Research memorandum, 68-40. Reprinted in Computer-Based Vocational Guidance Systems, Washington, DC: US Office of Education, Government Printing Office.

Martin Katz, SIGI Office, Educational Testing Service, Princeton, NJ 08541

This article explains the authors humanistic philosophy, underlying his theory of career decision-making. The author takes the view that wisdom derives not from the outcome of a decision but from the process of decision-making. The process of decision-making involves the construction and choosing of alternatives which in turn involves active and systematic exploration of competing values. When the individual has formulated his/her own value system, he/she will be ready to lay his/her values on the line in making a decision. Decision-making should be an ongoing process, subject to continual revision. The author suggests that counselors should not be concerned with the "right" decision (the content) but rather with the process of choosing. Counselors may educate the student about the process of decision-making so that he/she can take responsibility for his/her own decision-making, examine his/her options in a systematic and comprehensive way, take purposeful action in testing hypothesis about his/her self in various situations, and exercise flexibility in devising alternate plans.

The author presents his personal philosophy. His previous work is cited in the reference section of this 10 page article.

96

TS
Katz, M.R. (1973). Career decision-making: A computer-based System of Interactive Guidance and Information (SIGI). From proceedings of the 1973 Invitational Conference of Testing Problems-Measurement for Self-Understanding and Personal Development, Educational Testing Service.

Martin Katz, SIGI Office, Educational Testing Service, Princeton, NJ 08541

The purpose of this document is to explain the doctrine of psychology upon which the System of Interactive Guidance and Information (SIGI) is based. This doctrine emphasizes the autonomy of each person, one's free will, one's capability of making purposive, intentional decision about one's own behavior. In the SIGI system, the student interacts with a computer in such a way as to examine and explore one's own values, obtain and use relevant information, interpret predictive data and formulate plans. As the student progresses through SIGI, one develops competencies and masters strategies for rational behavior in career decision-making.

This document discusses each of the four subsystems of SIGI (VALUES, INFORMATION, PREDICTION, and PLANNING), emphasizing the primacy of individual values. The document includes simulations of the summary text on the terminal for each subsystem.

The author concludes that without directing the content of an individual's choice, SIGI helps the student in the process of choosing. References are included in this 26 page document.

TS
Katz, M.R., & Norris, L. (1972). The contribution of academic interest measures to the differential prediction of marks. Journal of Educational Measurement, 9, 1-11.

The purpose of the study reported in this article was to examine whether the addition of interest measures as predictors improved the differential prediction of a battery of aptitude tests. The data in this study are based on follow-up questionnaires returned by two subsamples of the original population, a national sample of 19,000 11th graders in the fall of 1966. Seven hundred and forty-nine randomly chosen questionnaires provided the basis for computing 12th grade predictions. The second subsample was derived from members of the 11th grade study population who were later identified as enrollees in post-secondary educational institutions (N=1069).

Scores were obtained from the PSAT abilities test and the AIM Interest Inventory, administered to the entire study population in 11th grade. Interest measures were found to add appreciably to differential validities, particularly at the high school level. Differential validities remained quite low, however - typically in the .20's and .03's - probably because of the high intercorrelations among the criteria. The relationship between intercorrelations of actual criteria and intercorrelations of predicted criteria are examined, and the implications of this relationship are discussed.

The study provides experiential evidence of the utility of self-report measures, such as interest inventory, in the differential prediction of academic success. Data are contained in tables and references are provided.

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TS
Manning, W. (1981, January). From Bernini to Katz--a look at SIGI's Future. Keynote address at the National SIGI Conference, Newport Beach, CA.

The System of Interactive Guidance and Information (SIGI) is presented as a computer-assisted career guidance system which is coherent, pleasing, and stimulating. The speaker indicates that SIGI has internal coherence because it was conceived as an expression of a coherent, liberal, humane philosophy of education and guidance in the mind of Martin Katz. For that reason, the speaker believes that SIGI will endure, and Educational Testing Service will continue to foster its development as an important expression of its own commitment to excellence in education.

References are contained in this seven page document.

38

TS

Pitz, G., & Harren, V. (1980). An analysis of career decision making from the point of view of information processing and decision theory. Journal of Vocational Behavior, 16, 320-346.

This study reviews implications for career decision making that might be drawn from studies of human information processing and decision making. The authors indicate that normative decision theory may be regarded as an individualized view of the rationality towards which a person might strive. Descriptive studies, however show how limited is the rationality of people's behavior when they are left to their own devices. Techniques of decision analysis have been developed for helping people to make better decisions. These methods might be of value to career decision making, both in supplementing traditional guidance procedures, and in defining criteria used to evaluate career decision making.

Katz's work in the area of career decision making is discussed in some depth. Katz points out that the most important information for a person making a career choice may be information from the personal domain, a domain not considered in normative decision theory. Katz applies some of the principles of decision theory to career decision making in the development of the System of Interactive Guidance and Information, a computer-based career guidance system. The authors state that Katz' work is in the right direction and indicate that further work needs to be done along these lines.

This work provides an understanding of some of the theoretical basis for the SIGI system. References are included.

SS

Chapman, W., & Seibel, M. (1981). Counselor's Handbook for SIGI on microcomputer. Princeton, NJ: Educational Testing Service.

SIGI Office, Educational Testing Service, Princeton, NJ 08541

The Handbook is intended to assist counselor's in learning both the nature of the information dispensed by each subsystem in SIGI and also the function of that subsystem in the decision-making process. SIGI's six subsystems (VALUES, LOCATE, COMPARE, PREDICTION, PLANNING, and STRATEGY) are described with respect to the functions of organizing and disseminating information, and the subsystem's function in the decision-making process.

Discussions of each system include information describing what the student does in the system, printouts the student can get, things for the counselor to look for, use of the printout in counseling students, and how the conselor can help the student use the system. A discussion intended to clarify the distinction between the weights students assign to a value to signify its importance to them, the rating of an occupation on that value, and the specification they impose on the value in order to retrieve occupations in LOCATE is provided. Guidelines and implications regarding situations in which empty lists occur in the LOCATE system (i.e., a set of values/specifications does not retrieve any occupations) are also discussed. The document is 171 pages long.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The Handbook recommends that counselors first go through SIGI in the role of a student and then read the Handbook chapters that discuss each system. It is advised that counselors then return to SIGI and look at the subsystems from a counselor's point of view. Discussions of how the student interacts with SIGI, things for the counselor to look for in each system, use of the printouts in counseling students, and how counselors can help students use each system are presented.

SS
Educational Testing Service. (1982). *SIGI Crosswalk*.
Princeton, N.J.: Author.

SIGI Office, Educational Testing Service, Princeton, New Jersey 08541.

This document catalogues occupations contained in SIGI by using alphabetically listed SIGI titles and by presenting occupation numbers from the *Dictionary of Occupational Titles*, 1977 edition. Corresponding SIGI numbers, *Standard Occupational Classification* (SOC), revised edition 1980, numbers, and alternative titles for the SIGI occupation are also presented. Forty four (44) pages.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

SIGI Crosswalk can be used as a reference for locating the occupation numbers of SIGI occupations and some alternative titles in the *Standard Occupational Classification Manual* (1980) and the *Dictionary of Occupational Titles*. This resource can facilitate location of additional information on SIGI occupations as well as information on related occupations.

/C'/

SS

Johnson, C., & Harlan, C. (Eds.). (n.d.) Workbook for Adult SIGI Users. Available from Project LEARN, Educational Testing Service, Princeton, NJ 08541.

Cynthia Johnson, Department of Higher and Adult Education, Box 101, Teachers College, Columbia University, New York, NY 10027.

This workbook is intended to assist counselors in facilitating the interaction of adult users with the system of Interactive Guidance and Information (SIGI). Exercises that have been reported as being successful by SIGI user sites throughout the country are presented, and in explanation, suggesting a rationale for the exercises is provided. The exercises are directed towards assisting adult-users with the SIGI orientation process. Assessment instruments which are designed to determine the user's readiness for SIGI are also included.

The workbook also includes sections discussing special needs of adults, exercises to be completed before and during the use of SIGI, exercises which can be used to facilitate follow-up interviews, and suggestions for evaluating SIGI. References and a list of resources with addresses and prices related to achieving greater self-understanding is provided in the 101 page workbook.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

Counselors may find the workbook to be particularly valuable in preparing adults for the use of SIGI through exercises and assessment instruments. The workbook can also be used to enlighten counselors on general issues which may be applicable to adults using SIGI.

SS
Pears, L., & Weber, A. (1978). Occupational Information in SIGI. Princeton, NJ: Educational Testing Service.

SIGI Office, Educational Testing Service, Princeton, NJ 08541

The purpose of the Handbook is to provide the researcher with definitions, rating categories and clarification of terms used in the System of Interactive Guidance and Information (SIGI) program. The clarification of the occupational information in SIGI is provided by the Educational Testing Service, so that data may be collected and interpreted.

Specific information includes the definitions and rating categories for the ten values assessed by SIGI: Early Entry, Income, Helping Others, Leadership, Prestige, Leisure, Independence, Variety, Security, and the six Interest Fields. Also included in this 16 page Handbook are guidelines for assigning salary ratings and clarification of the terms denoting impact on the public and the level of contact with the public in the various occupations.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The Handbook provides researchers with detailed definitions and rating categories of the ten values assessed in SIGI. This information can be used to collect, interpret, prepare, analyse, and document data consistently across researchers. Counselors may find the Handbook useful for gaining an understanding of SIGI's Values content.

SS

Riesenberg, B. (Ed.) (n.d.). Training Leaders Guide for SIGI. (Available from SIGI Office, Educational Testing Service, Princeton, NJ 08541).

The purpose of the Training Leaders Guide for SIGI is to assist leaders in their training of counselors who will be working with clients before, during, and after using SIGI. The Guide is designed for use with the workbook of training materials developed to assist adult or non-traditional age users of the system.

A model training session designed to be presented in six to fourteen hours (depending upon the familiarity of the participants with SIGI) is outlined. The model specifies topics to be covered with suggestions for accompanying activities and projected completion times. Topics recommended by the model include an introduction, discussion of the theoretical background and development of SIGI, rationale for SIGI/Counselor relationship and role, student orientation, use of the Counselors' Handbook and Workbook for Adult SIGI Users, published by the Educational Testing Service, use of SIGI with adult learners, and system management plan. A discussion outline of the rationale of SIGI is presented and a list of common problems experienced in the system's implementation are reviewed. A sample evaluation form for the Project LEARN counselor training session is also provided. The Guide consists of 11 pages.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

Suggestions of training activities necessary for the competent use of SIGI by counselors are made in the Guide. Supplemental descriptive information as well as references to other sources may serve to augment the counselor's understanding of SIGI.

SS
Rosen, O., Sampson, J.P., Jr., & Chapman, W. SIGI VALUES subsystem exercise. Unpublished manuscript, University System of Georgia Computer Network, Athens, GA.

James P. Sampson, Jr., Department of Human Services and Studies,
215 Stone Building, Florida State University, Tallahassee, FL
32306

The SIGI VALUES subsystem exercise is designed to provide students using SIGI with an opportunity to examine their values prior to using the VALUES subsystem. The Exercise, which may be given to the student when they schedule their first appointment with SIGI, contains the value weighting and ranking section of the VALUES subsystem, as it is experienced on the terminal. Students are instructed to bring the completed exercise with them to their scheduled appointment with SIGI. The Exercise allows students to move more quickly through the initial values rating process. The SIGI VALUES Subsystem Exercise consists of two pages.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The SIGI VALUES Subsystem Exercise enables the counselor to have the student examine their values prior to their SIGI experience. This leaves additional time in a one or two hour appointment to play the VALUES game or locate lists of occupations.

SS

Sampson, J.P., Jr. (1979) Counselors guide to facilitating student use of SIGI. Unpublished manuscript, Georgia Institute of Technology, Student Counseling and Career Planning Center, Atlanta, GA.

James P. Sampson, Jr., Department of Human Services and Studies,
215 Stone Building, Florida State University, Tallahassee, FL
32306-3001

The Counselor's guide to facilitating student use of SIGI (the System of Interactive Guidance and Information) is designed to provide counselor's with quick reference information that is necessary to assist students in obtaining the maximum benefit from using SIGI. Counselor's are encouraged to consult the Counselor's Handbook For SIGI for a more detailed explanation of the concepts, operation, and application of the system.

First, a brief overview of SIGI is presented. Orientation informaton is provided through a discussion of SIGI's purpose, operation of the system, and references to sources which can be used to facilitate the student's SIGI experience.

The second part of the Guide presents an introduction to each of SIGI's 6 subsystems; VALUES, LOCATE, COMPARE, PREDICTION, PLANNING, and STRATEGY. The purposes of each subsystem are presented, and the steps that students engage in as first time users along with a list of potential problems is outlined. A list of things for the counselor to look for and suggestions for the use of the printouts in counseling students is also provided.

The Guide, which is adapted from the Counselor's Handbook for SIGI (Chapman, 1977), is 14 pages long and is available from the author.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

Counselors can use this resource to obtain quick reference information relating to the concepts, operation, and application of SIGI. Suggestions regarding things for the counselor to look for and suggestions for the use of printouts in counseling are designed to assist counselor's in sessions prior to and following the use of the subsystems.

SS
Sampson, J.P., Jr. (1979). Student guide for SIGI use.
Unpublished manuscript, Georgia Institute of Technology,
Student Counseling and Career Planning Center, Atlanta, GA.

James P. Sampson, Department of Human Services and Studies, 215
Stone Building, College of Education, Florida State University,
Tallahassee, FL 32306.

The purpose of the Student Guide for SIGI Use is to provide the user with information on operating procedures and potential benefits and problems associated with using the System of Interactive Guidance and Information, (SIGI). The Guide adopted from the Counselor's Handbook for SIGI contains an explanation of the SIGI program, operating procedures, as well as an explanation to the student of what SIGI can and cannot provide.
The purpose of each of SIGI's six interrelated subsystems (VALUES, LOCATE, COMPARE, PREDICTION, PLANNING, and STRATEGY) is presented. The student is offered several thought questions to help them in processing the data obtained. The Guide consists of 9 pages.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The Student Guide for SIGI Use can be used by counselors to orient the student to the SIGI program. Counselor's may use the thought questions to help the student process, interpret, and apply the self and occupational data, obtained through use of SIGI, to making rational career decisions.

SS
Sampson, J.P., Jr. (1980). SIGI COMPARE Subsystem Exercises. Unpublished manuscript, Georgia Institute of Technology, Student Counseling and Career Planning Center, Atlanta, GA.

James P. Sampson, Jr., Department of Human Services and Studies,
215 Stone Building. Florida State University, Tallahassee,
Florida, 32306-3001

COMPARE is a subsystem of the System of Interactive Guidance and Information (SIGI) which is designed to provide users with an opportunity to gather occupational information necessary in the career decision-making process. The SIGI COMPARE Subsystem Exercise is designed to provide users with an organized plan for beginning the process of narrowing down the lists of occupations generated in the LOCATE subsystem.

The exercise is presented in two parts. Users are instructed to complete Part 1 prior to their interaction with the COMPARE subsystem. The directions specify completing Part 2 at the terminal in conjunction with use of the COMPARE subsystem.

Part 1 instructs users to place occupations listed on LOCATE subsystem printouts as well as other occupations of interest into categories based upon interest, familiarity, and desire to explore in greater detail. A checklist of occupational questions available in the COMPARE subsystem is then presented. Users are instructed to refer to occupations which they wish to further explore and check questions of interest. A list of other sources of occupational information is provided.

Part 2 of the exercise is directed towards further exploration of occupations which the user has described as unfamiliar or uncertain. Suggestions of questions which are helpful in determining to reject an occupation or to obtain further detailed information are made. Users are encouraged to obtain detailed information about occupations which appear attractive. The exercise is 4 pages long and is available from the author.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The SIGI COMPARE Subsystem Exercise provides users with a systematic approach to deciding if they wish to further explore or reject occupations. Questions listed on the checklist may be useful in helping both the counselor and user identify priorities among various occupational variables.

SS
Sampson, J.P. Jr. (1981). Abilities and limitations exercise (SIGI version). Unpublished manuscript, Georgia Institute of Technology, Student Counseling Center, Atlanta, GA.

James P. Sampson, Jr., Department of Human Services and Studies,
215 Stone Building Florida State University, Tallahassee, FL
32306-3001

The Abilities and limitations exercise (SIGI version) provides a structured approach to assisting individuals in evaluating how well abilities and limitations match what is required in various occupations. The Exercise is divided into 6 steps: Step 1 asks individuals to list up to eight successful personal accomplishments. Individuals are then presented with a list of abilities which have contributed to each accomplishment. Individuals are also given an opportunity to list any other abilities which have not been mentioned.

In step 2, individuals are instructed to list up to 5 unsuccessful personal experiences while indicating limitations which have contributed to these unsuccessful experiences. Step 3 involves summarizing abilities and limitations. Individuals are instructed to list their abilities and limitations, classifying the latter as either fixed or temporary. It is recommended that steps 1, 2 and 3 be completed before the individual begins the COMPARE subsystem of SIGI.

Steps 4, 5, and 6 are designed to be completed while interacting with SIGI's COMPARE and STRATEGY subsystems. In Step 4, individuals are encouraged to apply information they have learned about themselves to the process of choosing an occupation. A list of suggested questions to ask during COMPARE is presented, and individuals are encouraged to decide if the abilities and fixed limitations summarized earlier match the requirements of each occupation under consideration.

Step 5 is designed to assist individuals in estimating chances of success for completing the steps required to enter occupations they are considering. Questions in COMPARE which are assumed to be helpful in gathering this information are suggested.

Finally Step 6 encourages individuals to make secondary occupational choices and test out tentative career choices. Possible methods of testing tentative and secondary career choices are suggested. The exercise is 7 pages long and is available from the author.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

Counselors can use the exercise to help individual's in the process of evaluating personal abilities and limitations. Information elicited by the exercise may provide insight into the individual's self-concept, motivation and level of career maturity.

SS

Sampson, J.P. Jr. (1979). _User guide for SIGI_. Princeton, NJ: Educational Testing Service.

SIGI Office, Educational Testing Service, Princeton, NJ 08541

The _User Guide_ provides information on operating procedures and potential benefits and problems associated with using the System of Interactive Guidance and Information (SIGI). The author discusses the type of assistance SIGI is designed to provide, the user's status and progress through the SIGI subsystems, information regarding the operation of SIGI, and how user's can maximize benefits from using SIGI. The purposes of the VALUES, LOCATE, COMPARE, PLANNING, and STRATEGY subsystems are reviewed, and the user is presented with several thought questions for the each subsystem. The user guide is adapted from the _Counselor's Handbook For SIGI_ (Chapman, 1977). Copies of the 8 page _User Guide_ may be obtained from the Educational Testing Service at no cost.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The _User Guide_ can be referred by counselors to users of SIGI to provide assistance with operational procedures and give some general information about the system. The thought questions maybe useful in encouraging thinking about experiences encountered at the terminal.

110

SS
Chapman, W. (1975). Counselor's handbook for SIGI.
Princeton, NJ: Educational Testing Service.

SIGI Office, Educational Testing Service, Princeton, New
Jersey, 08541.

The Counselor's Handbook for SIGI is intended to familiarize counselors with the theory that underlies SIGI, to describe the components of the system, and to anticipate problems that students may encounter in using it. The handbook consists of ten chapters and two brief appendixes. The chapters explain the theoretical and developmental background of SIGI; the physical operation of the system; the interaction with the system, the printouts received by the student, the problems they may get into, and the ways in which counselors can help students. SIGI's six subsystems (VALUES, LOCATE, COMPARE, PREDICTION, PLANNING and STRATEGY) are described with respect to the functions of organizing and disseminating information, and the subsystems' function in the decision-making process. The final chapter presents a general model for decision-making based on the principles found in SIGI.

The author cautions that research on the SIGI system is incomplete, and that much of the "handling problems section" should be regarded as speculative in nature, containing conjectures as to what may happen. References are contained in this 296 page document.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

The Counselor's Handbook for SIGI can be used by the counselor to become familiar with the theory and conceptual basis of the System of Interactive Guidance and Information System. Discussions of how the student interacts with SIGI, things for the counselor to look for in each system, use of the printouts in counseling students, and how counselors can help students use each system are presented.

SS
Pyle, K.R. (1980). SIGI career group counseling manual.
Alma, MI: Alma College.

The SIGI career group counseling manual is designed as a training manual for counselors using the System of Interactive Guidance and Information (SIGI) in a group career counseling program. The manual serves as a planning resource for SIGI group leaders, and includes a brief summary of research related to computer applications and group counseling in career development.

A description of the SIGI Group counseling program at Alma College is contained in the manual, together with program goals and objectives,and desired learner outcomes to guide the potential facilitator in using SIGI within a career development group. References are included in this document.

HOW THIS RESOURCE CAN BE USED BY COUNSELORS

This manual may be useful to counselors in providing them with an understanding of the advantages of career counseling in small groups. Group settings make more efficient use of the counselor's time in giving information and teaching basics about SIGI and about career decision making. In groups, students benefit from hearing the ideas of others, finding out that they are not alone in their indecision, receiving feedback from a variety of sources, and practicing their new decision making skills with one another.

PS
Hartshorne, N. (1983). Making hard choices: On campus with SIGI. Princeton, NJ: Educational Testing Service.

SIGI Office, Room T-148, Educational Testing Service, Princeton, New Jersey 08541.

The structure and content of the System of Interactive Guidance and iNformation (SIGI) developed at the Educationa Testing Service are described as is the theory of guidance behind the system. SIGI helps students establish a hierarchy of values and learn to think in a different way. SIGI was designed to be used as a complement to exsisting human counseling resources. SIGI helps the user to learn what information they need, to get what information they want, and to use what information they have to make career decisions in a rational and systematic way. A resource for further information is included in the 3 page pamphlet.

* *

PS
Heppner, M.J. (1985). Overviews: DISCOVER II, SIGI, and MicroSKILLS: A descriptive review. Journal of Counseling and Development, 63, 323-325.

Mary J. Heppner, Coordinator Adult Career Services, Career Planning and Placement Center, University of Missouri, Columbia, MO

This article presents an overview of three computerized career information and guidance systems, including the System of Interactive Guidance and Information (SIGI), developed at the Educational Teting Service. The six subsections of SIGI (VALUES, LOCATE, COMPARE, PREDICTION, PLANNING and STRATEGY) are briefly described. SIGI is a values-based system. That is, the information in the system is accessed through a values clarification process.

Those considering the installation of a computerized career information and guidance system are advised to consider cost of the program, compatible hardware, age and experience level of typical users, and time needed on the computer. This three page overview includes a resource to contact for further information on SIGI.

PS
Katz, M.R. (1977). The significance of SIGI. California Consortium Invitational Conference Proceedings, University of California-Irvine, Irvine, CA.

SIGI Office, Educational Testing Service, Princeton, NJ 08541

This publication contains highlights from the text of Dr. Katz's keynote address, brief summaries of the panel discussions and workshop sessions of the invitational conference on the System of Interactive Guidance and Information (SIGI), cohosted on March 7, 1977, by the University of California, Irvine and the Educational Testing Service. The keynote address emphasizes the significance of SIGI in helping students with their career decisions. SIGI tries to help students learn a process of making rational and informed career decisions, through structured interaction with the computer, based on their individual values. SIGI allows the user to interpret information about self which they provide, and information about occupations.

This document contains panel summaries of the development of SIGI, the pilot studies and its' further refinement, focusing on the introduction and management of the SIGI Project at UC-Irvine. The workshop summaries contain information on: 1) the technical aspects of the computer, ther terminal units and the SIGI software program; 2) the integration of SIGI into an institutions overall program of career planning and advisement; and 3) both student and faculty perceptions about SIGI. The summary contains personal observations of the presenters who refer to previous research to conclude: 1) SIGI is well received in the four year college setting; 2) SIGI should be integrated with the complete guidance programs; and 3) SIGI should not stand alone. The conference schedule is included in this 10 page publication.

PS 114

Nagy, D.R., & Donald, G.M. (1981). System of Interactive Guidance and Information (SIGI). In D.H. Montross & C.J. Shinkman (Eds.), _Career development in the 1980s_ (pp.148-150). Springfield, IL: Charles C Thomas.

A brief description of the System of Interactive Guidance and Information (SIGI) is presented in this book chapter. SIGI's purpose is described as two-fold: it serves as a career development and occupational information tool, and it instructs the student in the decision-making process.

SIGI°s six interrelated program components (VALUES, LOCATE, COMPARE, PREDICTION, PLANNING, and STRATEGY) are briefly reviewed. The PREDICTION and PLANNING subsystems are prepared individually for an institution by the Educational Testing Service, thereby allowing an opportunity to tailor the program to an institution's unique population, schools and course offerings. The time required to complete the program is estimated to be between one and one-half to two hours. Fees involved in the program's operation are discussed. An address for obtaining more information on SIGI is provided in this 2 page chapter.

* *

PS

Rubin, K. (1983, October). Finding a career that loves you. _MS._, pp. 98, 100, 103-104.

Karen Rubin, Editor, _Making it!_ The careers newsmagazine, 2109 Broadway-Room 4155, New York, NY 10023.

The System of Interactive Guidance and Information (SIGI) is presented as one of the newer tools availabel for career pathing. Career pathing involves the isolation of aptitudes, interests, values, motives, and goals, in addition to the categorization of occupations by these individual traits. The contents of four of SIGI's subsystems (VALUES, LOCATE, PLANNING, and STRATEGY) are briefly described. A resource for further information is included in the 1 page section of SIGI.

PS
Shatkin, L. (1980). System of Interactive Guidance and Information (SIGI). In L. Shatkin, Computer-Assisted Guidance: Description of Systems (96-101). Princeton, NJ: Educational Testing Service. (ERIC Document Reproduction Service No. ED 187 851)

SIGI Office, Educational Testing Service, Princeton, NJ 08541

The System of Interactive Guidance and Information (SIGI) is described with respect to the system's scope, content, structure, and procedures. Sources of the system's information are specified and a schedule for updating information is suggested. An address from which further information may be obtained is given in this 5 page document.

* *

PS
Shatkin, L. (1982). SIGI. In L. Shatkin, Guidance on the microcomputer: Current software compared (pp. 26-31). Princeton, NJ: Educational Testing Service.

Laurence Shatkin, SIGI Office, Educational Testing Service, Princeton, NJ 08541.

This document describes a few distinctive features of seven computer assisted guidance (CAG) systems, including the System for Interactive Guidance and Information (SIGI), which was the first CAG system reprogrammed for the microcomputer. The scope and content of SIGI are described. The author concludes that SIGI's self-assessment section is completely self-contained and that SIGI locates occupations based on user's identified values. The developers of SIGI, Educational Testing Service, have provided a thorough set of procedures and operational definitions of the value rating scales, that includes review by experts in the field. References are provided in this 33 page document.

PS
Career guidance by computer. (1979). Mosiac, 10, 17-22. 116

The System of Interactive Guidance and Information (SIGI) developed by the Educational Testing Service over a ten-year period with the help of the Carnegie Corporation and the National Science Foundation, is discussed as a computer-based system designed to help students make career decisions. Dissatisfaction among career guidance professionals with the way American students choose careers is reviewed. SIGI is presented as a computer software package programmed to lead and assist students through the career decision-making process in a systematic and informed manner.

The model from which SIGI is designed is reviewed by Martin Katz, creator of SIGI. SIGI represents a departure from past guidance models. The individual is emphasized in the decision-making process and freedom of choice is stressed while considering individual ability and chances of success in a chosen field.

SIGI's evolution as a career guidance tool and several evaluations of SIGI are reviewed. The subsystems utilized in SIGI are discussed and approaches to the use of SIGI by various users are presented.

Funding and costs associated with the use of SIGI are reviewed in a discussion of the future of SIGI as a computer counseling aid for career counselors. The article includes a list of institutions using SIGI.

* *

PS
Carnegie Corporation of New York. (1974). Seeking a future: How a computer can help students make career choices. Carnegie Quarterly, 22, 1-4.

The System of Interactive Guidance and Information (SIGI) is described as a complement to human guidance counseling. SIGI's guidance process and the six major subsystems (VALUES, LOCATE, COMPARE, PREDICTION, PLANNING and STRATEGY) are reviewed. SIGI enhances students' abilities to master the factors involved in making a decision. SIGI requires students to actively and systematically explore their values as well as the probable outcome involved in a career decision. SIGI encourages students to seek help from guidance counselors to further explore their ambivalent feelings and possible choices and to develop contingency plans. A resource for further information is included in the 4 page article.

117

PS
Cochran, D.J., Hoffman, S.D., Grimm, K., Rademacher, B., & Warren, P. (1976, April). University Counseling Center: Computerized career guidance program. Paper presented at the annual meeting of the American Personnel and Guidance Association, Chicago, IL.

Donald J. Cochran, Career Development Services, Illinois State University, Normal, IL 61761

The System of Interactive Guidance and Information (SIGI) and the many ramifications of its implementation at the Counseling Center at Illinois State University (ISU), Norman, IL, are traced over a period from 1972 to 1976. The paper is divided into five sections with each co-author responsible for a different topic. Cochran presents the history of the installation and use of SIGI at ISU. Hoffman discusses the theoretical basis and issues of career development. Grimm and Rademacher present descriptions of the tasks involved in creating the local data for the Prediction and Planning substystems respectively. Warren describes the research possibilities of SIGI. Emphasis is placed on developing a conceptual framework encompassing all career development activities, including SIGI, in the Student Counseling Center at ISU.

The paper is written in retrospect, with reference to written correspondence and from the viewpoint of the Student Counseling Center staff involved. The authors conclude that SIGI is a potential resource for research in the career decision-making process. References are included for each of the distinct topics presented in the 22 page document.

PS
Isaacson, L.E. (1985). Computer systems in career counseling. In L.E. Isaacson, Basics of career counseling (pp. 350-353). Boston, MA: Allyn and Bacon.

The chapter on computer systems in career counseling provides an overview of the System of Interactive Guidance and Information (SIGI) program. The philosophical basis of SIGI proposes that values identification and clarification are basic to an effective career-decision process, involving evaluation of the rewards and risks that accompany each option. The SIGI system leads the user through six sequential modules that teach that concept. The series of modules (called subsystems in SIGI) is preceded by an introductory module that teaches the basic concepts used by the system and familiarizes the user with the subsystems he/she will encounter. The subsystems (Values, Locate, Compare, Prediction, Planning, and Strategy) are briefly described. Each subsystem includes some didactic material related to that specific module, and since each piece is an essential part of SIGI's view of the career-decision process, the didactic material teaches that total process. The author concludes that SIGI is forthrightly based on a clearly conceived theoretical position. By emphasizing the importance of values, it will be seen by some as underplaying other important attributes. By requiring the user to progress methodically through its conception of the career-decision process, it will be seen as more rigid and less flexible than systems that do not adhere to a clear philosophic position. References are included at the end of the chapter.

PS

Katz, M.R., & Chapman, W. (1978, April). SIGI: An example of computer-assisted guidance. *Educational Technology*, 57-59.

SIGI is a computer-based System of Interactive Guidance and Information designed to help students, in two-year and four-year colleges, make rational and informed career decisions. SIGI is not eclectic. It is based on humanistic philosophy, a theory of guidance that emphasizes individual values, a carefully analyzed store of occupational information, and a strategy for processing information--all blended into a unified system. SIGI provides a clearly defined structure of decision-making for all users, but responds flexibly to individual needs and circumstances. The content of SIGI incorporates six major subsystems: Values, Locate, Compare, Prediction, Planning, and Strategy. Each user proceeds at his/her own pace. Scripts are written for the eighth-grade level. Average time spent at the terminal is four hours, usually spread over two or three sessions.

The authors cite their own previously published literature and other sources, concluding that SIGI is acceptable to students and counselors, and is effective in helping students make career decisions. References are included.

PS
Maze, M., & Cummings, R. (1982). Analysis of the System of Interactive Guidance and Information. In M. Maze & R. Cummings, How to select a computer-assisted career guidance system, (pp. 79-96). Madison, WI: University of Wisconsin, Wisconsin Vocational Studies Center.

The System of Interactive Guidance and Information (SIGI) is one of the most theoretically pure computer-assisted career guidance systems (CACGS). Conceived by Dr. Martin Katz, it is designed to teach values clarification and the decision-making process to college students. This chapter discusses the system goals, the didactic, assessment, and informational components of SIGI, as well as the internal structure and system management requirements.

Since the aim of SIGI is to teach a process for rational decision-making, every module contains some didactic material. The majority of didactic material is offered in a highly interactive format. Each of the five modules, (Values, Locate, Compare, Prediction, Planning, Strategy) are described, as is their specific role in instruction information dissemination, and/or assessment.

The authors cite published literature and include copies of screen displays in explaining their personal observations of the system's structure. They conclude that clients may generally use SIGI without much assistance. Due to the complexity of the concepts being taught, however, the program must do most of the leading through the decision-making process, although it leaves decisions up to the user. References are included as is a listing of supporting documents for SIGI.

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PS

McKee, B.G., & Chiavoroli, K.S. (1984). Computer-assisted career guidance with hearing-impaired college students. Journal of Counseling and Development, 63, 162-167.

This article reviews one computer-assisted guidance system and discusses methods for counselors to select, evaluate, and implement other such systems in their environment. The System of Interactive Guidance and Information (SIGI) was acquired by the National Technical Institute for the Deaf (NTID) in 1978 and has been in use now for 7 years. A brief overview of SIGI and of the NTID is provided. The recommendations are based both on published research and experience of the NTID staff and students. Probably the single most important factor in implementing a computer-assisted guidance system with a handicapped population is choosing a system that is compatible with and supportive of the needs of that population. Creating a proper environment for the system is extremely important. Items to be considered in establishing the environment include the physical location of the system, staffing needs, development of appropriate implementation strategies and counselor attitude toward the system. More than 12 different auxiliary educational materials were developed to help NTID students get the most out of SIGI. Special consideration must also be given to the development of implementation strategies. Examples of strategies include the use of the SIGI as an integral part of a specially designed course, individual student use either by referral or on a walk-in basis, and as a required adjunct to an existing course. Evaluation of the system within the environment must occur. The authors briefly summarize their findings based on research and evaluation of the SIGI system at NTID. References are included and the reader is encouraged to contact the authors for additional information.

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Riesenberg, B. (1980). Report to the W.K. Kellogg Foundation on three year comprehensive summary of the demonstration model for computer-assisted career planning at U.C. - Irvine. Unpublished manuscript, University of California-Irvine, Office of Student Affairs, Irvine.

This report describes the activities and accomplishments of a three year program in which a demonstration model for computer-assisted career planning, using the System of Interactive Guidance and Information (SIGI) was developed by the Career Planning and Placement Center at the University of California-Irvine (UCI). Evaluation results and plans for an external evaluation are also presented.

A Career Testing Program for community members was conceived and implemented during the third year of the project. The program integrated information from SIGI, an interest inventory, and a personality test. The program attracted high school students, reentry women, and career changers. SIGI was also utilized in two on-campus model programs. The first, for re-entry women enrolled at local community colleges, was designed to enhance their educational and professional aspirations. The purpose of the second program was to facilitate the development of personal and professional skills needed for career advancement by university clerical and support employees. Reactions from all three groups was generally positive; however, some limitations were identified. While the values section was viewed as a clear asset in the three programs, the reentry women felt consideration of additional values would have been helpful. The planning and strategy sections were less valuable to the clerical employees. Finally, the occupational information was considered limited by the community users. The authors conclude that special attention must be given to the nontraditional users' needs and objectives when using SIGI. For results of the evaluation of the SIGI System, readers of this abstract are referred to the Riesenberg abstract in the ES section of the Clearinghouse materials.

PS

Sampson, J.P.,Jr., Peterson, G.W., Domkowski, D., & Reardon, R.C. (1986). A differential feature-cost analysis of DISCOVER for Adult Learners and SIGI PLUS (Technical Report Number 4). Unpublished manuscript, The Florida State University, Project LEARN - Phase II, Tallahassee.

DISCOVER for Adult Learners (DISCOVER AL) and SIGI PLUS are newly developed computer assisted guidance systems designed to assist individuals in making career decisions. The purpose of this report is to provide an objective and current descriptive comparison of the features and costs of these two systems using the following rubrics: (a) user friendliness (human factors), (b) information for career decision making, (c) decision processes on which programs are based, (d) support materials, and (e) limitations.

The contents of this report consist primarily of a complete descriptive listing of the features and costs of DISCOVER AL and SIGI PLUS, gathered from the manuals provided by the respective firms, American College Testing Program (DISCOVER AL) and Educational Testing Service (SIGI PLUS), interviews with ACT and ETS staff members, as well as the collective experiences of the authors as they themselves and their clients interacted with the systems.

The authors note that the report is not intended as a detailed report, but that it is the result of the authors reviews only, not that of the systems' developers; and is not intended as a promotional or marketing device for either system. The reader is strongly encouraged to examine future research reports to ascertain the relative merit of the features and costs of the two systems. Raw data are presented in data summary tables. References are available.

PS

Weinrach, S.G (1980). SIGI's on first, who's on second? Vocational Guidance Quarterly, 29, 85.

In his column, Other Voices, the author discusses his reaction to use of SIGI, and alerts VGQ readers of an article written by Martin Katz, "SIGI: An interactive aid to career decision making." SIGI stands for the System of Interactive Guidance and Information, a computer-assisted guidance system designed for college students. It focuses on helping users make choices related to personal and work values. From personal observation, the author concludes that the article he refers to is well worth reading, and that playing with SIGI is informative and a lot of fun.

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PS

Wilhelm, S.J. (1978). Computer-based guidance systems: Are they worth it? Journal of College Placement, 38, 65-69.

This article describes five computer-based career guidance systems which may be applicable on the college level: the Career Information System (CIS), the Computerized Vocational Information System (CVIS), DISCOVER, the Educational and Career Exploration System (ECES), and the System of Interactive Guidance and Information (SIGI).

The System of Interactive Guidance and Information (SIGI) was originally designed to help community college students make informed and rational career decisions. The content of SIGI consists of six interrelated subsystems--Values, Locate, Compare, Prediction, Planning, and Strategy --which comprise an organic system for career decision making. The emphasis is not merely on the content of the decisions but on the process of decision making itself.

The author quotes published literature, and concludes that these computer-based systems are continuously being revised and updated. It is the responsibility of the institutions' staff to determine if computer-based career guidance systems are worthwhile on their campuses. References are available as are addresses for obtaining additional information on the five systems discussed.

ES
Devine, H.F. (1975). The effects of a computer-based career counseling program on the vocational maturity of community college students. Unpublished doctoral dissertation, University of Florida, Gainesville, FL.

Department of Counselor Education, The University of Florida, Gainesville, FL.

The study was designed to investigate the effects of the System of Interactive Guidance and Information (SIGI) on the vocational maturity of community college students; an index associated with relative career development. Vocational maturity was measured in 84 students through Crite's Career Maturity Inventory (CMI) and a questionnaire developed by the investigator. Subjects were randomly assigned to two treatment and two control groups of a Solomon group design.

Of particular interest in this study were subject attitudes toward careers as a result of interaction with SIGI, subject knowledge of self and careers, and decision-making skills. The study also examined differential effects of the SIGI program on males compared to females and on subjects in a vocational-technical program compared to those in a university transfer program.

No significant differences between scores of treatment and control subjects were found on the CMI Attitude Scale or on the CMI's three competence test scales, suggesting that SIGI did not affect one's career maturity. Similarly, no differences were found between treatment and control subject's ability to state either an occupational or educational choice. The investigator notes that while differences were not significant, subjects interacting with SIGI tended to be more committed to academic and career choices made than control subjects. Potential reinforcement provided by SIGI is discussed as a rationale for this trend. No differences between subjects on the basis of sex or academic program enrolled in were found.

The limitations of the instruments used, motivation of subjects, and time interval between pretest and posttest are discussed as contributors to the results of the study. Statistical data and a review of related literature is provided in this 127 page doctoral dissertation.

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ES
Chapman, W. (1978). SIGI proves to be an effective career guidance system. Findings, 2, 5-8.

Warren Chapman, Research Psychologist, Educational Testing Service, Princeton, NJ 08541

The System of Interactive Guidance and Information (SIGI), a computer-based career guidance system, was developed at Educational Testing Service. This article evaluates SIGI at 5 community colleges and 1 university, using both theoretical and functional criteria. The theory of guidance represented by the system should be appropriate to the society in which the system operates. The underlying theory of guidance developed by Martin Katz states that the decision maker's own values form the major element in the decision-making process. The field tests showed that the user's weighted values caused the computer to retrieve different lists of occupations. Users of SIGI became more autonomous and rational in their decision-making behavior. The main functional criteria are that the system be effective, attractive, and readily manageable with a minimum of intervention by technical experts. The author found that at each of the test sites, both students and counselors rated SIGI highly.

The author concludes that SIGI is an effective tool, which is based on valid assumptions, is attractive to the user and counseling staff, and offers ease of operation and maintenance. References are provided in this 4 page article.

ES

Chapman, W., Katz, M.R., Norris, L., & Pears, L. (1977). SIGI: Field test and evaluation of a computer-based System of Interactive Guidance and Information. Princeton, NJ: Educational Testing Service.

SIGI Office, Educational Testing Service, Princeton, NJ 08540

The computer-based System of Interactive Guidance and Information (SIGI) developed by the Educational Testing Service was field-tested and evaluated at five community colleges and one university. A detailed report of this effort is presented. SIGI assists students in the process of making informed and rational career decisions by taking students through a process in which individual values are examined, relevant information about occupations is retrieved by the computer, predictive data is generated, plans are formulated, and decision-making strategies are presented.

The formative evaluation was directed towards understanding (1) problems or gaps students found in the SIGI displays and content; (2) whether all elements of the system were used; (3) whether the "do- it-yourself" manuals could be used efficiently; (4) how valid the test-free prediction system was; and (5) how SIGI could be integrated with the total career guidance program at each college. The summative evaluation covered five major areas: (1) hardware reliability and cost; (2) students' reactions to SIGI; (3) the effects of SIGI on students' career decision-making; (4) the impact of SIGI on counseling activities and guidance problems; and (5) summary data on students' use of SIGI. The report concludes that SIGI ran smoothly, was received enthusiastically by students and counselors, and proved effective in increasing students' mastery of career decision-making competencies.

Appendices to the final evaluation report contain the manuals used in the operation of SIGI and reprints of the instruments used in the evaluation. References are provided in this 636 page document which may be purchased for $20.00.

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Chapman, W., Norris, L., & Katz, M.R. (1973). SIGI: Report of a pilot study under field conditions. Princeton, NJ: Educational Testing Service.

SIGI Office, Educational Testing Service, Princeton, NJ 08541

This report describes the procedures and results of a small-scale pilot study of the System of Interactive Guidance and Information (SIGI) developed at the Educational Testing Service. The rationale of SIGI is first presented through discussions of the system's humanistic ethic, emphasis on the process of helping individual's make choices, and emphasis on values. A description of the four major sections of SIGI and hardware configuration is also provided.

Data sources, procedures, and test instruments used in the pilot study are then described. Sources of data included selection of SIGI°s ten value dimensions, data for the information system, ratings of occupations, regression analyses on a number of predictor variables, and data for the planning system.

The student pool at Mercer County Community College (Mercer, Georgia) was stratified by curriculum, with a sample of students chosen randomly from each curriculum list in numbers approximating the percentage of students currently enrolled in that curriculum. The sample was also stratified by sex. Experimental and control groups were matched on reading and math test scores.

Interview sessions were conducted with experimental students approximately one week after completion of SIGI and with control students before their use of the system. During this session a student participated in an oral interview, responded to a written information test, played a decision-making game, and made a personal evaluation of SIGI (experimentals only). A discussion of scoring on these measures and reprints of the interview schedule, information test, student evaluation form, and simulated occupational choice (SOC) game directions are provided. An illustration of the use of SIGI is presented through a case study. Variability in student behavior is noted.

Descriptive data collected by the computer on the behavior of the thirty-one experimental students are presented. Summary statistics are reported for each subsection of SIGI (VALUES, LOCATE, COMPARE, PREDICTION, PLANNING, STRATEGY). The author's concluded that SIGI was used very much as it was designed to be used.

The remainder of the report presents an overview of evaluative highlights. Students' evaluation of SIGI and the utility of the system under field conditions are discussed in some detail. References and a reprint of SIGI Counselor's Handbook (Chapman, 1973) are provided in this 246 page document.

ES
Cochran, D.J., Hoffman, S.D., Strand, K.H., & Warren, P.M. (1977). Effects of client/computer interaction on career decision-making processes. *Journal of Counseling Psychology*, *24*, 308-312.

The impact of the System of Interactive Guidance and Information (SIGI), a computer-assisted guidance system designed by the Educational Testing Service, on career decision-making processes of college students is investigated in this research study. The researchers hypothesized that, 1) students using SIGI will manifest greater change toward a higher decision-making stage than will members of a control group, and 2) students using SIGI will manifest greater change toward internality (awareness of values) than will members of a control group.

Seventy-two undergraduate college students at Illinois State University voluntarily participated in the study. The students were randomly assigned to experimental groups (n=48) and control/wait groups (n=24).

Both experimental and control students were pretested and post-tested with The Vocational Decision-Making Checklist (VDC) and The Locus of Control Scale (LCS).

The experimental treatment included a 3-hour interaction with SIGI scheduled in 1-hour time blocks within a 10-day period, brief interviewing, and an informational questionnaire designed by the Educational Testing Service. The control/wait students completed SIGI after posttesting.

A two-way analysis of variance was performed on each dependent variable under investigtion; locus of control of reinforcement and occupational decision-making stage. The results showed significant (P< .05) positive changes for the treatment group on pre-post measures of decision-making stage related to choice of college major. No significant changes (P< .05) were found in prepost decision-making stage measures related to vocation or to locus of control of reinforcement. The data suggests that interaction with a computerized system can enhance decision-making skills, particularly with respect to choice of an academic major. The authors conclude that SIGI demonstrated positive effects when presented outside of the ongoing counseling context. References and statistical data are provided.

ES
Davis, D., & Dickson, J. (1980). A progress report on the System of Interactive Guidance and Information: October 1976 to June 1979. Unpublished manuscript. Delta College, Counseling Center, University Center.

Delta College, Counseling Center, University Center, Michigan 48710.

The Counseling Center at Delta College, University Center, Michigan conducted a three year evaluation of the effectiveness and impact of the System of Interactive Guidance and Information (SIGI) on students' career search behavior. A "SIGI User Follow-up" survey was designed and sent to 603 randomly chosen SIGI users who had completed all parts of the program. A reproduction of the survey is included in the report. The 305 responding subjects tended to be young (18-20), female (68%), freshman (42%), and day students (53%). Fourty-one percent of the subjects were 25+ years of age and included the nontraditional older student. Overall the results implied that the students found SIGI to be a valuable addition to the career services offered at Delta College. The students' written comments suggested that SIGI together with the resources of counselors and printed material are a necessary part of the process of making or confirming a career decision.

Recommendations are made to explore alternative uses of SIGI with an older population. A literature review, references, and statistical data are provided in this 26 page manuscript.

ES
Fredericksen, G. (1978). (SIGI utilization through June 23, 1978). Unpublished raw data.

California State Polytechnic University, Career Planning and Placement Center, 3801 West Temple Avenue, Pomona, California 91768.

The Career Planning and Placement Center of the California State Polytechnic University (Polomona, California) conducted a pilot project in 1978 to assess student use and opinion of the System of Interactive Guidance and Information (SIGI). This report presents a variety of figures from the first seven months of this project about students who used SIGI, their reactions to the system, and changes subsequent to system utilization.

Demographic breakdowns are presented by age, sex, race, and academic devision. T-tests of the data yielded a significant (p<.001) change in all five pre-post measures. The results suggested that student response was positive, and that the SIGI program teaches: 1) important concepts, 2) a decision making process, and 3) provides valuable information. Continued funding of the SIGI program at CSPU was recommended. A reproduction of evaluation forms used is included in the 5 page document. Further statistical information is available on request.

ES

Fredericksen, G.E. & Fullerton, T.F. (1978). The report of the pilot project to evaluate the System of Interactive Guidance and Information. Pomona, CA: California State Polytechnic University, Career Planning and Placement. (ERIC Document Reproduction Service No. ED 182 465)

Career Planning and Placement, California State Polytechnic
University, Pomona, CA. 91768

A pilot project conducted by the California State Polytechnic University, Pomona investigated the value of the System of Interactive Guidance and Information (SIGI) as a career planning tool, and assessed its impact on the university's instructional timesharing computer from November 1977 to December 1978. The scope of the study was based on an evaluation plan which covered: (1) demographic information and the reported impact of SIGI; (2) program utilization; (3) cost of implementation and projected costs per student user; and (4) the impact of SIGI on the computer timesharing system. Results indicated that : (1) undecided majors, women, younger, and lower division students were overrepresented as SIGI users; (2) at least 94% of the student users gave SIGI a grade of "A" or "B" in terms of its interesting aspects; (3) students tended to more ably identify their values, occupational choices, and issues regarding their career plans; (4) SIGI increased the productiveness of counselors' time; (5) faculty responses to SIGI were favorable; and (6) computer time allotted for SIGI was used efficiently. References, statistical data, and reprints of pre and post-evaluation forms are provided in the 25 page document.

ES
Fulford, C. (1982). SIGI support materials needs assessment - A final report. Tallahassee, FL: Florida State University, Curricular-Career Information Service.

Betsy Fulford, 2003 Apalachee Parkway, Vocational Education,
Florida State University, Tallahassee, FL 32306-3019

A needs assessment instrument was developed in an attempt to determine the type of support materials which could improve the implementation and outcomes of user and counselor experiences with the System of Interactive Guidance and Information (SIGI). The instrument was designed to provide: 1) general information about counselors and facilities; 2) a general audience analysis; 3) an analysis of media capabilities and preferences; 4) a prioritized list of goals and objectives for the materials; and 5) a determination of the points (before, during, and after) in the SIGI process where assistance is most required.

Two forms of the measurement instrument (a self-inventory type questionnaire) were developed. Form 1 was directed towards counselors who work with SIGI while form 2 collected information from SIGI users.

Data was collected from three different sources at Florida State University: 1) counselors working at a career information center (N=7); 2) a career planning class (N=28); and 3) graduate students enrolled in a Counseling Technology and Information Systems course (N=10). Frequency counts were made on items on Form 1 for demographic and psychographic data. A five point scale was used to assist in prioritizing goals and objectives for SIGI support materials.

On the basis of the needs assessment the author concluded that the top priorities in developing SIGI support materials should be: 1) to inform potential users about SIGI so they will ask to try it; 2) to give assistance to users when they are confused while using SIGI; 3) to demonstrate the value of the SIGI decision-making process so that the user will try to get the most out of the program; and 4) to give every SIGI user the opportunity of having complete introductory and follow-up instruction/information.

The author recommended that the development of 1) promotional materials to inform potential users about SIGI; 2) "help" materials in the form of cards or posters; 3) motivational introductory materials in the form of a videotape; and 4) a structured follow-up counseling session including a short post-test for SIGI principles and a standard checklist for counseling sessions be used as support materials to help meet the needs identified. Both Forms of the needs assessment instrument are included in this 34 page report.

ES
Jessen, J., Tennin, J., & Dettmann, N. (1976). (SIGI summary).
Unpublished raw data.

Eastfield College. Mesquite, Texas. 75150

The authors compiled a summary of Eastfield College students' reactions to the System of Interactive Guidance and Information (SIGI) from March through December 1975. The students rated SIGI favorably on interest level, clarity of directions, over all helpfulness, and in explaining values, finding occupations, and teaching a process for making a career decision. Recommendations are included in the 3 page document.

135

ES
Katz, M.R. (1980). SIGI: An interactive aid to career decision making. Journal of College Student Personnel, 21, 34-40.

The structure and content of the System of Interactive Guidance and Information (SIGI) developed at the Educational Testing Service is described, and a summary of findings from an extensive field test evaluation is provided. Through interaction with a computer students examine their own values, identify and explore options, receive and interpret relevant occupational data, and master strategies for decision-making. Tentative plans can be formulated and modified as new information, insights and experiences are accrued. While recognizing individual differences in values, interests, abilities, perceptions, preferences and plans, the humanistic philosophy upon which SIGI is designed provides a clearly defined structure of decision making through which students can be guided in making informed and rational career decisions. SIGI's guidance process and the six major subsystems (VALUES, LOCATE, COMPARE, PREDICTION, PLANNING, and STRATEGY) are reviewed.

In an attempt to determine the effectiveness of SIGI with respect to helping students at different stages of their career development, an evaluation utilizing interviews with students, questionnaires filled out by experimental and control groups (students randomly assigned to use SIGI either before or after completing the questionnaires), questionnaires completed by counselors, records of student's interactions with the system, and operators' logs were examined. The focus of the evaluation was on process variables and certain immediate outcomes : to measure gains in such areas as student's understanding of their values, knowledge of relevant occupational information, and competencies in career decision making. Findings from interviews and questionnaires indicated that students believed they were making progress toward autonomy and rationality as a result of their interactions with SIGI. Students tended to rate SIGI and all subsystems favorably, and counselors indicated that SIGI was a valuable addition to career planning and guidance services. Costs for a four-terminal system, including all hardware purchases, maintenance, software lease, and miscellaneous expenses were estimated to be about $1.50 per terminal hour, while lower unit costs are projected for systems with more terminals.

The use of SIGI as a resource for research in the career decision-making process is also discussed. A computer program can be set to collect, interpret and print student responses in compressed form to provide data on specified variables in each subsystem. References are provided.

ES
Neumann, E.F. (1978). Final report of the System of Interactive Guidance and Information. Pasadena, CA: Pasadena City College, Student Personnel Services.

Pasadena City College, 1570 East Colorado Boulevard, Pasadena,
California 91106

Pasadena City College California was one of six colleges nationwide which engaged in a field test of the System of Interactive Guidance and Information (SIGI). This report on the use of SIGI from March 17, 1975 to March 31, 1977 represents one aspect of a three-fold evaluation. The basic question of this evaluative study was to determine whether SIGI is more effective than traditional methods in helping students make better career decisions.

Volunteer students at Pasadena City College were randomly assigned to an experimental group (250 students) which used SIGI or to a control group (250 students) which was given a traditional vocational test (e.g., Kuder Occupational Interest Survey, Form DD; Strong-Campbell Interest Inventory; Personality Research Form, Form A; Comprehensive Tests of Basic Skills; Background Information Summary). Both groups received career guidance counseling following their experiences.

Outcomes of the research are reported with respect to significance at the .01 level and the .05 level (Chi Square). Comparisons of experimental and control groups on several measures as well as counselor's perceptions of experimental group students that were found to be significant are cited. Additional findings of the study are also reported. In general, this research study indicated that the students who completed the SIGI experience were better prepared to make appropriate career decisions than were the students who had the more traditional vocational testing and counseling program. References to resources providing detailed information about this research are presented in this 5 page document.

137

ES

Norris, L., Katz, M.R., & Chapman, W. (1978). Sex Differences in the career decision-making process. Princeton, NJ: Educational Testing Service.

SIGI Office, Educational Testing Service, Princeton, NJ 08541

Career decision-making behaviors of college students were investigated in an attempt to determine how variations in the career decision-making process may be associated with age, sex, and "sex-typed" values. The System of Interactive Guidance and Information (SIGI), a computer-based system, was used to collect data for this research. SIGI was developed to help students make informed and rational career decisions, and also to increase their freedom of choice, develop their understanding of the elements involved in choice, and improve competencies in the career decision-making process.

The research is presented in two parts. In the first part, the effects of age and sex on occupational values and other variables relating to the career decision-making process are examined. Values profiles for males and females were found to differ considerably. Other differences included high school English grades and counts of the number of times students interact with various components of SIGI.

The differences found in the first part made it possible to formulate groups with sex-typical and sex-atypical values, which was the focus of research conducted in Part 2. Analyses were made of differences and similarities in such behaviors as preferences for major fields of interest and kinds of occupations chosen.

Effects of initial status on career decision-making variables were sometimes found when age and sex effects were absent. Sex differences found tended to reflect traditional male and female stereotypes, especially in "typical" subgroups. The results also suggested that differences between "typical" and "atypical" subgroups within each sex often parallel those between the sexes.

The investigators concluded that similarities between age and sex groups in the career decision-making process are more important then differences. While individual differences in the career decision-making process are obiquitous, the variations appear to be independent of group membership thereby justifying "sex-blind" guidance. The investigators deduce that there is no apparent justification for providing different guidance treatments to males and females on the basis of sex.

Funding for this research was provided by a grant from the National Institute of Education, U.S. Dept. of HEW project number NIE-G-77-0002. The 182 page final report includes a review of the literature, references, and statistical data.

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ES
Pyle, K.R., & Stripling, R.O. (1976). The counselor, the computer, and career development. Vocational Guidance Quarterly, 25, 71-75.

An investigation of the relationship between career maturity as measured by the Career Maturity Inventory (CMI) attitude scale and student participation through classroom instruction in career development combined with use of the System of Interactive Guidance and Information (SIGI) was conducted at Santa Fe Community College, Gainesville, Florida. Sixty-six full-time students were used in a nonequivalent control group design. Students were required to complete SIGI over a three week period and meet weekly with a counselor who used the Counselor's Handbook for SIGI as a guideline for discussion. The results indicated that the SIGI students' posttest scores were significantly different from those of the control group at the personalized approach are discussed as possible explanations for the differences between groups. Implications for the use of SIGI with respect to counselor accountability and cost effectiveness are discussed.

A review of the literature and references are provided in this article.

ES

Riesenberg, B. (1980). Report to the W. K. Kellogg Foundation on three year comprehensive summary of the demonstration model for computer-assisted career planning at U. C. Irvine. Unpublished manuscript , University of California-Irvine, Office of Student Affairs, Irvine.

Career Planning and Placement Center, Office of Student Affairs.
University of California-Irvine, California 92654.

This report describes the activities and accomplishments of a three year program in which a demonstration model for computer-assisted career planning, using the System of Interactive Guidance and Information (SIGI), was developed by the Career Planning and Placement Center at University of California-Irvine (UCI). Evaluation results and plans for an external evaluation are also presented.

SIGI was used by 2,937 UCI students representing a variety of populations during the three year period. Questionnaires were administered prior to and immediately following each student's interaction with SIGI. The questionnaires were designed to assess the effectiveness of the SIGI project in facilitating the development of career decision making skills in five areas. The results of the pre-post analysis suggested that SIGI played an important role in clarifying values, providing academic and occupational information, developing confidence in decision making abilities, and narrowing career plans for most student groups. Student ratings of the helpfulness of SIGI's subsystem are presented. Other highlights from the three year project are also presented.

The SIGI project was also responsible for the development of a statewide SIGI Consortium, designed to encourage and facilitate the implementation of computer-based career guidance tools, especially SIGI, on California college and university campuses.

A Career Testing Program for community members was conceived and implemented during the third year of the project. The program integrated information from SIGI, and an interest inventory, and personality test. SIGI was also utilized in two on-campus model programs; (1) for re-entry women; and (2) for university clerical and support employees. Reactions from all three groups were generally positive, however some limitations of SIGI with nontraditional populations are noted. It is recommended that special attention be given to nontraditional user's needs and objectives when using SIGI.

Data tables provide both raw and statistical data for each questionnaire item. This manuscript contains 49 pages.

ES

Risser J.J., & Tulley, J.E. (1976) SIGI project research design summary of the pilot study. Unpublished manuscript, Pasadena City College, Pasadena, CA.

Pasadena City College, Student Personnel Services. 1570 East
Colorado Boulevard, Pasadena, California 91106.

The SIGI Project Research Design developed by Pasadena City College Psychologists in 1974 involved a pilot study to refine procedures proposed in the research. Students who were informed of the availability of SIGI for career counseling through the media were randomly assigned to either an experimental group which had the opportunity to use SIGI, or to a control group which was given a series of vocational tests. Among these batteries were the Comprehensive Tests of Basic Skills, Level 4, Form S; the Kuder Occupational Interests Survey, Form DD; the Strong-Campbell Interest Inventory; the Personality Research Form, Form A and the Background Information Summary. The treatment intervention was supplemented by career counseling. Fifty students were involved in both the control and experimental groups. Results indicated that the SIGI group expressed greater satisfaction with and confidence on several issues relating to educational and vocational planning. Additionally, it was found that Pasadena City College counselors rated the overall value of career counseling higher for students interacting with SIGI; this relationship was significant at the .01 level. Differences between the two groups were not found to be significant along 13 other criteria. Combined results tend to suggest that SIGI appealed to a representative sample of Pasadena City College students with regard to age, sex, ethnic distribution, and educational career plans. Reading ability did not correlate significantly with time spent on the SIGI terminal. These study indicated that students reacted positively to interaction with the SIGI system. Extended research is recommended. References are available.

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Sampson, J.P., Jr., & Stripling, R.O. (1979). Strategies for counselor intervention with a computer-assisted career guidance system. Vocational Guidance Quarterly, 27, 230-238.

Counselor intervention strategies in the use of computer-assisted career guidance systems are examined in this article. The study attempts to identify the optimal role of the counselor in helping students derive maximum benefit from their interaction with a computer-assisted career guidance system.

The System of Interactive Guidance and Information (SIGI) was used by subjects as a resource for career exploration. The system guides students through a career decision-making process. The sample consisted of 124 students enrolled in a personal and career development course at Santa Fe Community College, Gainesville, Florida. Students were assigned to a structured counselor intervention treatment group in which the Counselor's Handbook for SIGI was used as to guide interaction. A nonstructured counselor intervention treatment group. A control group, consisting of 20 students who voluntarily chose to interact with SIGI, was also included in the study. Students in the control group experienced no counselor intervention.

The SIGI Counselor-Student Interaction Record and the SIGI Evaluation Questionnaire: Form E were used as dependent measures. Absolute differences between structured and nonstructured groups in total counselor-student interaction time were examined from data collected by the SIGI Counselor-Student Interaction Record.

The structured group was found to have received over twice as much counselor-student interaction in SIGI-related discussions as the nonstructured groups. A one-way analysis of variance was performed to examine potential differences between the structured, nonstructured, and control groups on continuous data of the SIGI Evaluation Questionnaire: Form E. A chi-square analysis was used for all non-continuous data. Results of the analysis of continuous and discrete data are discussed. The authors indicate that structured and control groups tended to prefer working with SIGI and a counselor while the nonstructured group tended to prefer working with a counselor alone. Further data analysis indicated that students in the structured group spent significantly more time using SIGI and were more interested in using SIGI in the future than the nonstructured and control groups. Students in the structured and control groups tended to evaluate SIGI positively and indicated a preference for working with a counselor, while consistent differences were found to exist in evaluations of SIGI and preferences for using SIGI between the structured and control groups and the nonstructured groups. References and statistical data are included in this 8 page article.

ES
Sampson, J.P. Jr., Stripling, R.O., & Pyle, K.R. (1978). Geographic influences on values associated with career decision making. Vocational Guidance Quarterly, 27, 144-149.

This study addresses potential differences in the ways that student's from various geographic regions in the United States weigh the 10 career-related values within the values subsystem of the System of Interactive Guidance and Information (SIGI).

Experimental subjects were students who completed the values subsystem in SIGI at one of three institutions: Santa Fe Community College, Gainesville, Florida (Southeast); Eastfield (Community) College, Mesquite, Texas (Southwest) or Illinois State University, Bloomington, Illinois (Midwest).

Initially, students assigned weights without restrictions to the ten values within SIGI's VALUES subsystem. Then, students participated in a values clarification game which is part of the VALUES subsystem. Students were then required by SIGI to restrict the total score of all ten value weights to forty, thereby yielding unique value profiles.

A two-way analysis of variance was performed on the restricted value weights to determine if differences between value profiles exist between the three geographic regions. The results did not indicate significant differences between the value profiles in the three geographic regions. An analysis of the total value profiles for all students indicated significant differences ($p < .001$) between the ten individual values. The degrees of agreement of value rankings, and mean weights assigned to SIGI values for students in the three institutions are compared. The rank order of SIGI values for the total sample are as follows: (1) interest field, (2) high income, (3) security, (4) helping others, (5) independence, (6) variety, (7) leisure, (8) leadership, (9) prestige, and (10) early entry.

The authors suggest that professionals be aware of potential discrepancies in value preferences inferred from the results of the study. Recommendations for further research include investigating the extent to which value preferences are influenced by the variables of sex, age, race and socio-economic status. References and statistical data are available.

ES
Willingham, A. (1978). Evaluation of SIGI program. Unpublished manuscript, Mercer County Community College, Career Development Center, Trenton, NJ. 08690

Ms. Anna Willingham, Career Assessment Coordinator, Mercer County
Community College, 1200 Old Trenton Road, Trenton, NJ 08690

An evaluative report of the use of the System of Interactive Guidance and Information (SIGI) program at Mercer County Community College (MCCC) is presented. Matters of special interest to MCCC (e.g., retention rates, representativeness of the sample, experimental design, and local career education practices) are reviewed and highlights of the program's evaluation are presented and discussed.

Students' reactions and perceived benefits of the program are briefly summarized. A breakdown of SIGI°s sections reported by students to be most helpful is presented in the form of percentages and selected student comments about SIGI are cited. The most common comment from college students was that they wished they had used SIGI when they were in high school.

Conclusions from this SIGI evaluation are made from evidence regarding the program's operation, written and oral comments of students, and statistical comparison of questionnaire information obtained from students who had completed the SIGI program. Five recommendations are made on the basis of these conclusions.

Reprints of questionnaires used in the evaluation and an answer sheet to common questions about SIGI are supplied. Statistical data are also provided in this 25 page report.

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Fadden, T.F. (1983). The effects of computer-assisted guidance and information on the vocational maturity of college students when used alone and in combination with a career planning and decision-making course. Unpublished doctoral dissertation, Marquette University, Milwaukee, WI.

This study examines the effects of SIGI on the vocational maturity of college students who requested assistance in career planning and decision-making. The intent of the study was to observe the effects of SIGI when used alone and in combination with an established form of treatment.

A total of 70 Marquette University undergraduate students participated in this study. They were drawn from two sections of a course on career planning and decision-making and from students who came to the Marquette University Counseling Center to use the SIGI program. Three comparison groups were employed. One group took a course in career•planning but did not use SIGI. The second group participated in a similar course, but used SIGI as well. The third group used SIGI but did not take a career planning course. All participants completed a background information questionnaire and Career Development Inventory (CDI). The two class groups were pretested with the CDI at the start of the first class meeting. The posttest and background questionnaire were completed at the final class meeting (six weeks later). The SIGI users only group completed the CDI prior to their first use of the system, and six weeks after completing the system completed the posttest CDI and the background questionnaire.

Multivariate analysis of covariance indicated that the groups were similar although the SIGI-only group was more diverse then the other two groups and the class group was more likely to complete the SIGI program. No significant differences were found in the profiles of the posttest CDI scores between the three treatment groups, although there is an overall increase in some aspects of vocational maturity among all groups.

The author concludes that there is some overlap between treatment with SIGI and treatment via a Career Planning course. The author cautions that the generalizability of the study results are limited by the lack of random assignment of subjects to treatment groups.

This document contains a literature review, statistical data, and recommendations for future research. Copies of the research instruments are contained in the appendix. References are contained in this 142 page document.

ES

Kapes, J.T., Borman, C.A., Garcia, G.,Jr., & Compton, J.W. (1985, January). Using microcomputer based career guidance systems in a university setting: Reaction data from users. Paper presented at the annual meeting of the Southwest Educational Research Association, Austin.

This study presents user reactions to two computer-assisted career guidance systems, DISCOVER and SIGI, on the characteristics of ease of use, self-assessments used, quality of information provided, and perceived total effectiveness. Two distinct groups of Texas A&M students were used in this study. A single undergraduate class of students enrolled in a career development class in the Fall Semester, 1984, were studied to assess the reaction of undergraduate students. The second group of subjects, which consisted of 24 graduate students enrolled in an educational and occupational information course, were studied to assess the reactions of counselors in training.

All participants were introduced to both DISCOVER and SIGI systems which were delivered via IBM XT microcomputers, and then half were assigned to use one system and half the other. The instrument used to collect reaction data from subjects in this study was developed by the project staff based on characteristics selected for the study. Biographical data were also collected. The SPSSx statistical package was used to compute frequency/percent, means, chi-square, independent t and dependent t tests for all items in the four characteristic domains. Among the undergraduate students there were no significant differences in the ratings of the two systems with the exception that DISCOVER received a higher rating (P >.05) on "Opportunity to make changes within the system." There were no significant differences in the ratings of the two systems from counselors in training. The data from both groups of students were combined. Almost 1/3 of the students felt that the computer-based guidance systems exposed them to new information about themselves, while 2/3 of the students felt the systems confirmed what they knew about themselves.

The authors conclude that the results of this study indicate that the undergraduate students and counselors in training gave both DISCOVER and SIGI mostly high ratings, and there was very little difference in the ratings of the two systems. This study simply evaluated user attitudes toward each system through the use of a post use questionnaire. The questionnaire is included in the appendix, as are statistical data summaries. References are included in this 20 page document.

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Kapes, J.T., Borman, C.A., & Kimberly, R.M. (1985, April). Evaluation of microcomputer based career guidance systems with college students: SIGI and DISCOVER. Paper presented at the annual meeting of the American Educational Research Association, Chicago.

This report compares the effectiveness of two microcomputer based career guidance systems, the System for Interactive Guidance and Information (SIGI), produced by the Educational Testing Service, and DISCOVER, produced by the American College Testing Program. Specifically the study attempted to determine how college students who use these systems change in terms of the following career development measures: 1) Career Development Inventory, 2) Career Decision Scale, 3) Survey of Career Development, and 4) Self-assessment of Confidence and Progress in Educational/Career Planning. Additionally, the study assessed whether students who had used either system rated the systems differently in terms of ease of use, self-assessment, quality of occupational/educational information, and perceived total effectiveness.

A single undergraduate class enrolled in a career development course was used in the study. The 50 students were randomly assigned to either SIGI or the DISCOVER system and were expected to devote approximately one class period per week over a two month period on the system to which they were assigned. The SPSSx statistical package was used to compute frequency/percent, means, chi-square, independent t-tests and dependent t-tests, and multiple regression analysis.

Analysis of the data led to the conclusion that the Career Development course with either SIGI or DISCOVER produced a significant change ($p >.05$) in career development attitude but not in career development knowledge, at least as it is measured by the CDI. There were significant differences found between the pre- and post-test scores for the career development measures used in this study. However, the authors caution that the effects of the computer-based guidance systems could not be separated from the effects of the career development course that the students were taking. There were no significant differences in the ratings of the two systems with the exception that DISCOVER received a higher rating ($P >.05$) on "Opportunity to make changes within the system."

The authors discuss the limitations of their study in terms of the limitations of the instrumentation used, and and the confounding effects of CACGS used with the career development course. Statistical data is presented in data summary tables. Sample reaction questionnaires and references are included in this 26 page document.

ES

Norris, L., & Cochran, D.J. (1977). The SIGI prediction system: Predicting college grades with and without tests. Measurement and Evaluation in Guidance, 10, 133-143.

The purpose of the study reported in this article was to ask whether predictions of satisfactory validity can, in actual practice, be obtained using such nontest variables as self-ratings and informal self-estimates as predictors. All students enrolled in several key courses including English (n=54), Physics (n=52), History (n=108), and Speech (n=49) served as subjects. On the first day of classes, a questionnaire (Student Questionnaire from the SIGI Prediction subsystem) was administered to all subjects. ACT scores were available for each subject. At the end of the term, a final grade was recorded for all students who completed a questionnaire. Zero order correlations were computed between all predictor variables and final grades in each course. In addition, separate stepwise regression analysis were carried out to predict grades in the four key courses. For each of these courses, three sets of variables were used as the pool of possible predictors: (a) SIGI variables alone, obtained from a Student Questionnaire, (b) ACT scores alone, and (c) SIGI variables plus ACT scores. Description of these variables are included in the article.

Student's informal self-estimate of final grade is one of the best predictors of final grade. The findings are consistent across the four courses: (a) multiple R's, using two or three SIGI variables, are quite high, falling in the range of .45 to .64; (b) SIGI variables afford a higher level of prediction than do ACT scores; and (c) the addition of ACT scores to SIGI variables does not appreciably improve the prediction levels. The findings in this study, although limited in the extent to which they can be generalized, are consistent with similar validities for the SIGI variables in predicting grades for a wide variety of key courses at several other colleges. The authors conclude that (1) counselors need to depend less on "test and tell" methods and more on having students take an active role in the prediction process; and (2) counselors need to work with instructors to identify the kinds of criterion information that are useful to students in making accurate self-assessments. Data from the study are displayed in tables. The article provides the naive reader with a summary of self-predicted performance literature. References are included.

ES

Pelsma, D.M. (1982). The effects of learning style on satisfaction with a System of Interactive Guidance and Information. Unpublished doctoral dissertation, University of Missouri, Columbia, MO. (University Microfilm No. 83-10421)

The primary purpose of this study was to investigate the differences between individual learning style and satisfaction with using a computer-assisted career guidance and decision-making tool (System of Interactive Guidance and Information [SIGI]). Secondary purposes were to investigate the differences between individual learning styles and (1) the value profile from the VALUES section of SIGI, and (2) the main occupational field of interest selected in the VALUES section of SIGI.

The subjects in this exploratory study were volunteer students coming into the Career Planning and Placement Center on the University of Missouri - Columbia campus. At the time of signing up to use SIGI, the subjects completed Kalb's Learning Style Inventory (LSI) and a personal information questionnaire. After their completion of the VALUES section of SIGI, each subject responded to a SIGI Evaluation Form containing questions concerning Section I - VALUES. Subjects were then asked to complete the entire SIGI system within 2-4 weeks. At the end of the semester, each subject was contacted by telephone and asked to assess their overall perceptions of SIGI and the effectiveness of such a computerized form of career guidance.

To identify possible effects of learning style on satisfaction with SIGI, a 2x2 (abstract/concrete x reflective/active) statistical design was employed. A two-way chi squared test was used to determine if significant differences exist between groups based on learning styles. Findings from the data did not confirm the primary hypothesis, but did find significant ($p<.05$) differences between "Convergers" and "Accomodators" on the values of high income, helping others, and leisure. No significant differences were found among learning styles and occupational field of interest.

The author concludes that 1) SIGI is a satisfactory method of career guidance for the four learning style groups studied, 2) there appear to be significant differences in the ratings of values in subjects who differ in their learning style, and 3) there is only limited evidence to indicate that different learning style groups will differ in their occupational field of interest.

This document contains both raw and statistical data, literature review and recommendations for future research. References are included in this 88 page document.

ES

Pyle, K.R., & Stripling, R.O. (1977). Counselor vs. computer in career development. NASPA Journal, 14, 38-40.

This study sought to determine the relationship between career maturity, as measured by the Career Maturity Inventory (CMI) Attitude Scale, and student participation in a career development unit where the System of Interactive Guidance and Information was used as a laboratory experience. The sample consisted of 66 full-time community college students who were enrolled in a three hour behavioral science elective. During a three week career planning component of the course, counselors used the Counselor's Handbook for SIGI. Experimental subjects were required to complete the SIGI system during the three week career planning section. A nonequivalent control group design was used in this study. In order to equate the experimental and control groups, an analysis of covariance was used.

The data analysis resulted in the finding that the SIGI students' post test CMI scores were significantly different from the control group at the .01 level of significance. The authors discuss the various factors which could have led to this finding. The findings of this study support the concept that the counselor needs to be the manager of the computer and should utilize the computer as an additional tool in student career development. The authors state that the fact that career maturity attitudes were changed in a relatively short period of three weeks provides evidence of the potential for SIGI use in a classroom design as used in this study. References are included.

150

ES

Salters, L.G. (1984). SIGI, values-based computer software: Its effects on undecided students. Unpublished doctoral dissertation, University of South Carolina, Columbus SC.

The purpose of this study was to explore the effect of a values-based computer software package called SIGI (System for Interactive Guidance and Information) on undecided freshman student's level of indecision. SIGI was developed by Educational Testing Service under the direction of Dr. Martin Katz. Its purpose is to aid in the career decision-making process by involving the students in values clarification as a basis for making occupational and major career decisions.

The sample population in the current study consisted of 65 University 101 freshman students at the University of South Carolina in the spring semester, 1984. All were pretested with Osipow's Career Decision Scale, an instrument that yields a measure of the level of undecidedness. Thirty-three of these students were assigned to an experimental group who used SIGI. The remaining 32 students were assigned to a control group who delayed their use of SIGI until after the posttest. Both groups were posttested with the Career Decision Scale to determine any significant differences in the decidedness level or the undecidedness level.

The analysis of the data generated from this study revealed that there were not significant differences between experimental and control groups at pretest on either the decidedness or undecidedness levels. However the posttest analysis revealed significant differences between the experimental and control groups on both decidedness and undecidedness levels at the time of posttest. Use of SIGI significantly ($p < .05$) raised the decidedness level and significantly lowered the undecidedness level of the experimental group. The author concludes that values clarification may be effective in aiding undecided students in making career decisions.

This document includes charts of statistical data. Literature review and references are included in this 60 page document.

151

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Sampson, J.P., Jr., Shahnasarian, M., & Reardon, R.C. (1985). A national survey of the use of DISCOVER and SIGI: Technical report No. 1., Unpublished manuscript, Florida State University, Project LEARN- Phase II, Tallahassee.

This report describes a national survey of institutions using DISCOVER and SIGI as of June 1984. The purpose of the study was to provide aggregate descriptive data on the use of two guidance type CACG systems (DISCOVER and The System of Interactive Guidance, SIGI) at individual institutions on a national basis.

The respondents in this study were 677 institutional contact persons with some degree of responsibility for the use of the DISCOVER and/or SIGI systems. The following items were mailed to each contact person: (1) a form letter from either ACT or ETS; (2) a form letter from the investigators; (3) an order form that respondents could use to request free bibliographies developed by the investigators on DISCOVER, SIGI, and general issues related to the use of CACG systems; (4) the " Survey of Institutions Using DISCOVER and SIGI"; and (5) a postage paid return envelope. The condescriptive and frequencies subprograms of the Statistical Package for the Social Sciences were used to determine the distributional characteristics of responses to the survey items. A return rate of 64.7% (n=438) was obtained to the 30 item questionnaire.

Survey results are presented and discussed on the following topics: (1) system(s) currently in use, (2) institutional characteristics, (3) system configuration, (4) integration with other services, (5) counselor and staff interventions, (6) usage statistics for all users, (7) system management, (8) system implementation, and (9) potential needs.

The authors conclude that many institutions use the DISCOVER and SIGI CACGS system as an integral part of traditional career guidance and educational services. Others, however, have not engaged in the planning, staff training, and evaluation efforts necessary to deliver services that allow clients to obtain the full measure of benefits possible with CACGS technology.

The 43 page report includes 15 tables and four appendices. References are included as are copies of the entire mailout packet.

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Sampson, J.P., Jr., Shahnasarian, M., & Reardon, R.C. (1986). A national comparison of the use of DISCOVER and SIGI: Technical report No. 2. Unpublished manuscript, Florida State University, Project LEARN--Phase II, Tallahassee.

Clearinghouse for Computer Assisted Guidance Systems, c/o
Dr. J.P. Sampson, Jr., 215 Stone Building, The Florida State
University, Tallahassee, FL 32306-3001.

This report describes the results of a nationwide comparative study of the 677 sites using DISCOVER or SIGI as of June 1984. Software-based and institutionally-based factors influencing system use were explored. The former included theoretical bases, ease of software usage, and developer's implementation assistance, while the latter included staff competence, organizational dynamics, financial resources, clientele, implementation plan, and system integration with other activities and facilities.

The sample included 408 respondents (60.3%) of those surveyed. Multivariate log-linear models were used to analyze data in five areas of system use, and univariate analyses were used in two areas. Results suggested that institutionally-based factors, not software-based factors, were largely determining how DISCOVER and SIGI were used. However, it was noted that software-based factors, such as system theory bases, might be emphasized more by researchers, developers, and practitioners in order to maximize the impact of computer-assisted career guidance systems.

The report includes 10 tables and one appendix. The authors acknowledge the support and assistance of personnel at the American College Testing Program and the Educational Testing Service in completing this research.

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ES

Slusher, N.L., & White, K.R. (1978). A preliminary evaluation of the System for Interactive Guidance and Information with NTID students. National Technical Institute For the Deaf, Rochester, NY.

The purpose of this study is to examine how career counselors and NTID students react to SIGI and its potential for helping students in their career decision-making process. The evaluation was viewed primarily as a preparatory study for a more complete evaluation to be conducted during the summer of 1978.

Both students and career counselors report that they feel very positive about the potential use of SIGI at NTID. SIGI is viewed as both helpful and interesting. One of the most important findings from this preliminary evaluation of SIGI is the fact that only 35% of the students comprehended 75% or more of the material which was selected to assess students' comprehension of SIGI. This suggests that students with low levels of reading comprehension will have significant difficulty comprehending and gaining the full benefit of SIGI in its present form. These results suggest that it may be necessary to provide some kind of pre-session on terminal and/or concurrent support for many of the students at NTID if they are to obtain maximum benefit from SIGI. This document is 31 pages in length.

ES
Splete, H.H. (1984). Computerized career guidance systems and career counseling services. Unpublished manuscript, Oakland University, Adult Career Counseling Center, Rochester.

This report provides an overview of the development and implementation of computerized career guidance systems at Oakland University through the first year of operation of the Adult Career Counseling Center (January - December, 1983). The report includes a brief history of the development of the program and the Adult Career Counseling Center; a description of the services provided including the computerized career guidance systems (DISCOVER II and SIGI); a description of the 1,659 clients who used the center during the period of the report; an overview of the center's training programs; evaluation summaries of the services provided by the center; an overview of three research studies; and an indication of future plans.

The information presented in this document was gathered from manuals provided by the respective firms, American College Testing Program (DISCOVER II) and Educational Testing Service (SIGI), data collected during the period of the report, as well as the collective experiences of the authors and their clients. Data are presented in summary tables. The appendix includes a copy of the survey research instrument reflecting user reaction to DISCOVER II.

155

ES

Splete, H.H., Elliott, B.J., & Borders, L.D. (1985). Computer-assisted career guidance systems and career counseling services: Second annual report. Unpublished manuscript, Oakland University, Adult Career Counseling Center, Rochester.

This report provides an overview of the continuing development and use of computer-assisted career guidance systems at Oakland University during the second year of operation of the Adult Career Counseling Center (January - December, 1984). The report includes a brief history of the development of the program and the Adult Career Counseling Center; a description of the computer-assisted services provided (DISCOVER II and SIGI); a description of the 1,211 clients who used the center during the period of the report; an overview of the center's training programs; an overview of three research studies conducted in the center; and an indication of future plans.

The information presented in this document was gathered from manuals provided by the respective firms, American College Testing Program (DISCOVER II) and Educational Testing Service (SIGI), data collected during the period of the report, as well as the collective experiences of the authors and their clients. Data are presented in summary tables. The appendix includes guidelines for selecting a career, and a listing of essential resources for the career counselor.

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ES
Tulley, E.J., & Risser, J.J. (1977). SIGI project research study summary 1975-1977. Pasadena, CA: Pasadena City College.

Pasadena City College was one of six colleges nationwide which engaged in a field test of the System of Interactive Guidance and Information (SIGI). This report on the use of SIGI from March 17, 1975 to March 31, 1977 represents one aspect of a three-fold evaluation. The basic question was to determine whether SIGI is more effective than traditional methods in helping students make better career decisions.

Students at Pasadena City College were informed of the availability of SIGI for career guidance counseling through means of newspaper articles and flyers. The applicants were randomly assigned to an Experimental group which used SIGI, or to a Control Group which were given traditional vocational tests -- Kuder Occupational Interest Survey, Form DD; Strong-Campbell Interest Inventory; Personality Research Form, Form A; Comprehensive Tests of Basic Skills; and Background Information Summary.

The authors conclude that the students who completed the SIGI experience were better prepared to make appropriate decisions about their careers than were students who had more traditional vocational testing and counseling program. Specifically, when compared to the control group, students who used SIGI: (1) had better knowledge of college course requirements, ($p<.01$); (2) had more information about the characteristics of their chosen occupation, ($p<.01$); (3) had a greater knowledge of entry level requirements for their chosen careers, ($p<.01$); (4) had a greater knowledge of college course requirements to prepare for their chosen occupations, ($p<.01$); (5) had more knowledge of the factors which are important in making career decisions, ($p<.01$); (6) felt more sure in their choice of college programs and occupations, ($p<.01$); (7) expressed a higher degree of satisfaction with their educational plans, ($p<.01$); (8) expressed a higher degree of confidence of succeeding with their educational plans, ($p<.01$); (9) expressed a higher degree of satisfaction with their vocational plans, ($p<.01$); (10) expressed a higher degree of succeeding with their vocational plans, ($p<.01$); (11) expressed less need for additional help with their educational plans, ($p<.01$); and (12) expressed less need for further assistance with career planning.

References for further details about this research project are contained in this five page document.